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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN RE APPLICATION OF : Michael J. Sullivan
FOR : IMPROVED MULTI-LAYER
GOLF BALL
SERIAL NO. : 08/815,556
FILED : March 12, 1997
EXAMINER : M. Graham
ART UNIT : 3304
LAST OFFICE ACTION : October 22, 1997
ATTORNEY DOCKET NO. : SLD 2 035-1-1

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July 20, 1998

APPEAL BRIEF OF APPLICANT

Assistant Commissioner of Patents
Washington, D.C. 20231

Dear Sir:

On April 20, 1998, Applicant appealed to the Board from the decision of
the Primary Examiner of October 22, 1997, finally rejecting claims 1-13. What

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CERTIFICATE OF MAILING

I hereby certify that this Appeal Brief of Applicant
is being deposited with the United States Postal Service as
first class mail in an envelope addressed to:
Assistant Commissioner for Patents,
Washington, D.C. 20231 on July 20, 1998.

By:

Mary Ann Temesvari
Mary Ann Temesvari

follows is Applicant's Appeal Brief (submitted in triplicate) in accordance with 37 C.F.R. § 1.192.

I. Real Party in Interest (37 C.F.R. § 1.192(c)(1))

The real parties in interest in this appeal are the inventor named in the caption of this brief (Michael J. Sullivan) and his assignee, Lisco, Inc., a wholly-owned subsidiary of Spalding & Evenflo Companies, Inc. ("Spalding").

II. Related Appeals and Interferences (37 C.F.R. § 1.192(c)(2))

There are no other appeals or interferences currently in process or pending before the U.S. Patent and Trademark Office that will directly affect, or will be directly affected by, or will have a bearing on the Board's decision in this appeal.

III. Status of Claims (37 C.F.R. § 1.192(c)(3))

The status of the claims set forth after the Final Office Action mailed October 22, 1997 (Paper No. 17) was, and is, as follows:

Allowed claims: none

Rejected claims: 1-13

The present appeal is directed specifically to claims 1-13.

IV. Status of the Amendments (37 C.F.R. § 1.192(c)(4))

In the Final Office Action of October 22, 1997, the Examiner rejected claims 1-13 under 35 U.S.C. § 103 as being obvious and unpatentable over U.S. Patent 4,431,193 to Nesbitt in view of U.S. Patent 5,068,151 to Nakamura. No after-final amendments or responses were submitted in response to the final rejection. The Examiner's final rejection was directly appealed to the Board for reconsideration of the final rejection.

V. Summary of Invention (37 C.F.R. § 1.192(c)(5))

The present invention is directed to improved multi-layer golf ball cover compositions and the resulting multi-layer golf balls produced thereby. The novel multi-layer golf balls of the present invention include a first or inner layer or ply of a high acid (greater than 16 weight percent acid) ionomer or ionomer blend. A second

or outer layer or ply is included in the multi-layered golf balls comprised of a comparatively softer, low modulus ionomer, ionomer blend or other non-ionomeric thermoplastic elastomer such as polyurethane, a polyester elastomer or a polyesteramide. Preferably, the outer cover layer includes a blend of hard and soft low acid (i.e., 16 weight percent acid or less) ionomers.

It has been found that the recently developed high acid ionomer based inner layer provides for a substantial increase in resilience (i.e., enhanced distance) over known multi-layer covered balls. The softer outer layer provides for desirable "feel" and high spin rate characteristics while maintaining respectable resiliency. The soft outer layer allows the cover to deform more during impact and increases the area of contact between the club face and the cover, thereby imparting more spin on the ball.

Consequently, the overall combination of the inner and outer cover layers results in a golf ball having enhanced resilience (improved travel distance) and durability (i.e., cut resistance, etc.) characteristics while maintaining and in many instances, improving the ball's playability properties.

Along these lines, the combination of a high acid ionomer or ionomer blend inner cover layer with a soft, relatively low modulus ionomer, ionomer blend or other non-ionomeric thermoplastic elastomer outer cover layer provides for excellent overall coefficient of restitution (i.e., excellent resilience) because of the improved resiliency produced by the inner cover layer. While some improvement in resiliency is also produced by the outer cover layer, the outer cover layer generally provides for a more desirable feel and high spin, particularly at lower swing speeds with highly lofted clubs such as half wedge shots.

Although Spalding (the ultimate assignee of the present invention) and others had previously attempted to produce golf balls having multi-layered covers containing one or more ionomer resins exhibiting the overall distance, playability and durability characteristics desired, such attempts have been generally unsuccessful in comparison with the present invention.

VI. Issues (37 C.F.R. § 1.192(c)(6))

Whether claims 1-13 are obvious and unpatentable over the '193

patent to Nesbitt in view of the '151 patent to Nakamura.

VII. Grouping of Claims (37 C.F.R. § 1.192(c)(7))

No two or more of the claims at issue, i.e., claims 1-13, stand or fall together. That is, each claim recites separately patentable subject matter. This is explained in detail below.

VIII Arguments (37 C.F.R. § 1.192(c)(8))

A. The Examiner's Position

The Final Office Action of October 22, 1997, from which this appeal stems, refers to a previous Office Action dated March 15, 1996 in a parent application Serial No. 08/562,540, for the reasons allegedly supporting the rejection of claims 1-13. That March 15, 1996 Office Action referred to an earlier Office Action dated November 25, 1994 in another parent application Serial No. 08/070,510, for the reasons purportedly supporting the rejection of claims 1-13.

The reasons given by the Examiner for rejecting claims 1-13 in the November 25, 1994 Office Action were:

Claims 1-13 are rejected under 35 U.S.C. §103 as being unpatentable over Nesbitt in view of Nakamura for the reasons set forth in the previous action.

The applicant's entire argument is based on the premise that Nakamura only "briefly suggests" the use of high acid ionomer blends. A clear reading of Nakamura from the Abstract to the claims easily refutes such an assertion. The reference is directed throughout, at acid contents of 10 to 20%, and was available to the applicant prior to one year before the filing of the instant application.

Page 2 of the Action.

The "previous action" referred to was dated April 6, 1994, in which the Examiner asserted:

Claims 1-13 are rejected under 35 U.S.C. § 103 as being unpatentable over Nesbitt in view of Nakamura. Nesbitt discloses the claimed invention with the exception of the particular materials utilized. However, one of ordinary skill in the art would in view of Nesbitt's disclosure recognize that other

known materials could have been utilized in the invention so long as the cover comprised a harder inner layer overlaid by a softer outer layer. As disclosed by Nakamura the use of high acid ionomers is known in the art. It would have been obvious to one of ordinary skill in the art to utilize the known materials recited by the applicant in the relation suggested by Nesbitt absent a showing of unexpected results (Claims 1-4 and 6-13).

Concerning claim 5, it would have been obvious to one of ordinary skill in the art to have increased the thicknesses of Nesbitt's layers to increase the durability of the ball.

Pages 2-3 of the Action.

B. The Prior Art

1. The '193 Patent to Nesbitt

Spalding (the assignee of the present invention) and others have previously attempted to produce golf balls having multi-layered covers containing one or more low acid ionomer resins purportedly exhibiting the overall distance, playability and durability characteristics desired. However, such attempts have been generally unsuccessful. This is particularly evident in comparison with the present invention. As stated in the specification of the present application, Spalding, in the '193 patent to Nesbitt, disclosed a multi-layer golf ball which is produced by initially molding a first cover layer on a spherical core and then adding a second layer. The first layer is comprised of a hard, high flexural modulus resinous material such as type 1605 Surlyn® (now designated Surlyn® 8940). An outer layer of a comparatively soft, low flexural modulus resinous material such as type 1855 Surlyn® (now designated Surlyn® 9020) is molded over the inner cover layer. These are both low acid (as opposed to high acid) ionomer resins.

Although a ball of the Nesbitt '193 patent exhibits some enhanced playability characteristics with slightly improved distance (i.e., enhanced C.O.R. values) over a number of other known multi-layered balls, the ball suffers from poor cut resistance and relatively short distance (i.e., lower C.O.R. values) when compared to conventional two-piece, single cover layer balls. These undesirable properties make the ball produced in accordance with the Nesbitt '193 patent unacceptable by today's standards.

The deficiencies of the balls of the Nesbitt '193 patent are shown in the comparative examples included in the present application. For example, the coefficient of restitution of the golf ball having an inner cover layer taught by the Nesbitt '193 patent (i.e., inner layer composition "D" in the Examples) is significantly lower than the C.O.R. of the golf balls of the present invention.

In Table 7, page 42 of the instant application, intermediate golf balls (core and inner hard cover) are shown. The intermediate golf balls of the present application (A-C) have C.O.R. values of .811(A), .810 (B), and .807 (C). In contrast, the intermediate ball of Nesbitt has a C.O.R. value of .793.

Similarly, in Table 8, C.O.R. values for golf balls of the present invention (Examples 1-4) are .784 (1), .778 (2), .780 (3) and .770 (4) while the C.O.R. value for a ball according to the '193 patent to Nesbitt, is .757. Since each .001 point increase in C.O.R. amounts to an increase of approximately 2 to 3 feet in total distance over which a finished ball will travel, the difference of .013 to .027 represents an increase in total distance of from about 26 feet to about 81 feet for a ball according to the present invention as compared to the balls of the '193 patent to Nesbitt. This is significant in the game of golf where an increase in distance is very important.

Applicant submits that there is simply no teaching in Nesbitt which would render this increase in C.O.R. (and thus total distance of a hit golf ball) obvious to one of ordinary skill in the art at the time the invention was made.

2. The '151 Patent to Nakamura

In this regard, the Examiner relies on the '151 patent to Nakamura for the inference that the use of high acid ionomer resins is known in the art. However, Nakamura fails to disclose or remotely suggest the multi-layered golf balls of the present invention and/or the use of hard, high acid ionomer resins to formulate the **inner cover or mantle layer**.

Specifically, Nakamura generally relates to low acid, as opposed to high acid ionomer blends, to produce the outer cover layer of a golf ball. Although the reference briefly suggests that the acid content of the ionomer resin utilized may be of 5% or 10% to 20% by weight, it was not until fairly recently that ionomer resins

containing greater than 16% by weight acid became commercially available.

Further, Nakamura fails to disclose any advantage of using high acid resins (>16% acid) versus low acid resins. In fact, no Example of Nakamura uses greater than 15% acid.

While patents in the field of golf ball production have often asserted broad ionomer acid ranges such as those disclosed in Nakamura, to the Applicant's knowledge, no high acid ionomer resins (i.e., ionomer resins having an acid content of greater than 16% by weight and most preferably from about 17% to about 25% by weight acid) were commercially available prior to January 1, 1992¹. This is supported by the Examples set forth in Nakamura wherein all of the ionomer resins utilized therein have acid contents of 15% by weight or less. Thus, Nakamura fails to distinguish high acid ionomers from low acid ionomers (evidenced by reciting 5% to 20% acid), thereby treating them as equivalent.

Since Nakamura generally relates to low acid, as opposed to high acid ionomer blends, and fails to even remotely suggest the advantages (i.e., higher C.O.R. values, etc.) produced by the use of a combination of two or more specific high acid ionomer resins in golf ball cover production, this reference is deemed to not be pertinent to the multi-layered covers of the present invention.

Moreover, even if one were to view Nakamura as teaching hard, high acid resins, Nakamura cannot be combined with Nesbitt to obviate the present invention as Nakamura teaches using ionomeric resins in a golf ball **outer cover** rather than in a **mantle** (or inner cover) layer. While the Examiner has asserted that he is only relying on Nakamura for teaching high acid resins were known, there is simply no motivation in Nakamura to use such resins in a mantle layer. Rather, the only specific teaching of Nakamura shows low acid resins used in golf ball outer covers of two piece golf balls.

Applicant submits that 1) because Nakamura fails to suggest using any ionomer, much less the hard ionomers of the present invention, in an inner cover (or mantle) layer, Nakamura is not relevant as a prior art reference to establish that the hard ionomers of the present invention would have been obvious to use in an inner

¹The U.S. filing date of the Nakamura patent, February 2, 1990, is nearly two years before the date on which high acid ionomer resins became commercially available in the U.S. -- January 1, 1992.

cover layer of a multi-layer golf ball. Further, Nakamura does not provide any teaching that would motivate a person of ordinary skill in the art to substitute a high acid ionomer (>16% acid) (disclosed for golf ball outer covers in Nakamura) in the mantle (or inner cover) layer of Nesbitt wherein enhanced C.O.R., and thus a ball having increased distance, would result.

C. The Examiner's Rejection of Claims 1-13 as Being Obvious and Unpatentable Over The '193 Patent to Nesbitt in View of the '151 Patent to Nakamura is Erroneous and Must be Reversed

1. Claims 1-3²

Independent claim 1 recites a golf ball comprising, in part, an inner cover layer that is molded on a core. Claim 1 further recites that the inner cover comprises a high acid ionomer including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid, i.e., a high acid ionomer. Nesbitt entirely fails to disclose or even suggest incorporating a high acid ionomeric resin in an inner cover layer. Nakamura fails to remedy the deficiencies of the Nesbitt patent. Nakamura fails to disclose or even remotely suggest the use of hard, high acid ionomer resins to formulate the inner cover. "When obviousness is based on a particular prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference." *B.F. Goodrich Co. v. Aircraft Braking Systems*, 72 F.3d 1577, 1582 (Fed. Cir. 1996), citing *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577 (Fed. Cir. 1984).

Claim 1 further recites that the golf ball comprises an outer cover layer that is molded on the inner cover layer, which contains the high acid ionomer. Again, Nesbitt entirely fails to disclose this claimed aspect. And, Nakamura actually attaches away from the subject matter recited in claim 1. Nakamura teaches using ionomeric resins in a golf ball outer cover rather than in a mantle or inner cover layer. For at least these reasons, independent claim 1 is submitted to be non-obvious and allowable over the cited references.

Claim 2 is dependent from claim 1 and so contains all of the recitations of that claim. Claim 2 further recites that the inner cover layer comprises a high acid

² Although Applicant does not concede that any of the claims 1-13 stand or fall together, for purposes of brevity, Applicant groups certain claims together in addressing the various deficiencies of the present rejection. However, the rejection of each claim is separately addressed.

ionomer resin that includes a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid. Neither Nesbitt nor Nakamura teach, describe or suggest this particular aspect.

Claim 3 is also dependent from claim 1 and expressly recites that the high acid ionomer resin of the inner cover layer comprises a copolymer of about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid. This aspect is simply not taught in the references relied upon for the present rejection.

2. Claims 4-5

Claims 4 and 5 are both dependent from independent claim 1 and so, contain all of the recitations of that claim. In addition, these claims recite additional aspects pertaining to particular thickness ranges for the inner and outer cover layers. Claim 4 recites that the inner cover layer has a thickness of about 0.100 to about 0.010 inches and the outer cover layer has a thickness of about 0.010 to about 0.05 inches. This particular combination of thickness ranges for the covers, particularly when taken in combination with the high acid ionomer aspect of the inner cover layer defined in claim 1, is simply not described or suggested in the Nesbitt and Nakamura patents. Similarly, claim 5 recites a unique combination of specific thicknesses for the inner cover layer and outer cover layer -- the inner cover layer has a thickness of about 0.300 inches and the outer cover layer has a thickness of about 0.375 inches - which is not taught or suggested in the patents to Nesbitt and Nakamura. This particular aspect, especially when taken in combination with the other previously described aspects called out in claim 1, is in no way described in the cited references. For at least these reasons, claims 4 and 5 are non-obvious and patentable over the cited art.

3. Claims 6-8

Claim 6 is dependent from claim 1 and so contains all of the recitations of that claim. Claim 6 further recites that the outer layer low flexural modulus ionomer resin includes a blend of hard high modulus ionomer with a soft low modulus ionomer. The high modulus ionomer is recited as a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms. Claim 6 further recites the low modulus ionomer being a sodium or zinc salt of a terpolymer of an

olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms. There is absolutely no mention of this combination of components, nor the expressly recited aspects of these components in either of the patents to Nesbitt or Nakamura.

Claims 7 and 8, both of which are dependent from claim 6 and so contain all of its recitations, recite specific proportion ranges for the hard high modulus ionomer resin and the soft low modulus ionomer resin. There is absolutely no mention or even hint of these aspects, and especially the combination of these features, in the Nesbitt and Nakamura patents. For at least these reasons, all of claims 6-8 are non-obvious and patentable over the prior art of record.

4. Claims 9-11

Each of claims 9 to 11 is dependent from previously discussed claim 1, and so, each contains the recitations of claim 1. In addition, each claim recites a specific agent for use as the non-ionomeric thermoplastic elastomer that may be used in the outer cover layer. Claim 9 recites the elastomer as a polyester polyurethane. Claim 10 calls for the elastomer to be a polyester elastomer. Claim 11 recites the elastomer as a polyester amide. The particular combinations of features recited in these claims, especially when taken with the aspects called out in claim 1, are simply not described in the prior art.

5. Claim 12

Claim 12 recites a multi-layer golf ball comprising a spherical core, an inner cover layer molded over the core, and an outer cover layer molded over the spherical intermediate ball to form a multi-layer golf ball. The inner cover layer is recited as including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid. As previously noted, Nesbitt entirely fails to disclose or even suggest incorporating a high acid ionomeric resin in an inner cover layer. And, Nakamura fails to disclose or even remotely suggest the use of hard, high acid ionomer resins to formulate the inner cover.

In addition, claim 12 further specifically recites that the particular ionomeric resin utilized in the inner cover layer have a modulus of from about 15,000 to about 70,000 psi. Neither Nakamura nor Nesbitt, taken singularly or in combination, teach, describe, or suggest this aspect. Accordingly, the unique

combination of these aspects of the inner cover layer, i.e., that it comprise at least 16% of an alpha, beta-unsaturated carboxylic acid, and that it comprise a certain ionomeric resin having a particular modulus, is not taught in either of the patents cited by the Examiner.

Claim 12 further recites and in addition to the foregoing aspects, that the outer cover layer comprise a specific blend of two components. The first component is a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms. Neither Nakamura nor Nesbitt, taken individually or in combination, teach, describe or even suggest this aspect. The non-obviousness of this claim is readily apparent in view of this claimed aspect, especially when taken in conjunction with the previously noted features of the inner cover layer.

The second component utilized in the outer cover layer blend, and expressly recited in claim 12, is a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid, and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms.

It is indisputable that the references relied upon by the Examiner entirely fail to teach or even suggest this aspect, and this aspect taken in combination with the foregoing features of the inner cover layer and the other component utilized in the outer cover layer blend.

Notwithstanding the nonobviousness of the noted subject matter recited in claim 12, claim 12 further recites yet another aspect of the claimed golf ball -- that the outer cover layer have a modulus in the range of from about 1,000 to about 30,000 psi. Neither of the patents cited by the Examiner teach this aspect. And, neither of the patents teach, or even remotely hint at, a multi-layer golf ball having the unique combination of features recited in claim 12 -- that the inner cover layer comprise an ionomeric resin including at least 16% of an alpha, beta, unsaturated carboxylic acid, that the ionomeric resin of the inner cover layer has a modulus of from about 15,000 to about 70,000 psi, that the outer cover layer comprises a blend of (i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms and (ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon

atoms, acrylic acid, and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, and that the outer cover layer has a modulus in a range of about 1,000 to about 30,000 psi. Clearly, claim 12 recites patentable subject matter.

6. Claim 13

Claim 13 recites a multi-layer golf ball comprising a spherical core, an inner cover layer, and an outer cover layer. Claim 13 calls for the inner cover layer to comprise an ionomeric resin that includes about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid. Claim 13 further calls for the particular ionomeric resin to have a modulus of from about 15,000 psi to about 70,000 psi. This aspect is not described in either the Nakamura or Nesbitt patents. The combination of this aspect and the particular proportion of the certain ionomeric resin called for in claim 13 is not described in the Nakamura or Nesbitt patents.

Claim 13 also recites that the outer cover layer comprises a specific type of non-ionomeric thermoplastic selected from a group of polyester elastomer, polyester polyurethane and polyester amide. Claim 13 additionally recites that the outer cover layer have a modulus in the range of from about 1,000 to about 30,000 psi. Again, there is no mention in either of the two references relied upon by the Examiner of an outer cover layer comprising one or more of these types of non-ionomeric thermoplastics, having a modulus within this recited range, in combination with an inner cover layer that comprises an ionomeric resin that includes a certain amount of an alpha, beta-unsaturated carboxylic acid and that has a specific modulus. It simply cannot be said that claim 13 recites obvious subject matter.

D. The Significant Commercial Success of the Claimed Golf Ball Warrants Reversal of the Examiner's Rejection of Claims 1-13 as Being Obvious

The Court of Appeals for the Federal Circuit has stated that, "objective indicia of nonobviousness, when present, are invariably relevant to the determination under Section 103." *Litton Systems, Inc. v. Honeywell, Inc.*, 87 F.3d 1559, 1569 (Fed. Cir. 1996) citing *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538, 218 USPQ 871, 879 (Fed. Cir. 1983). "Objective considerations may often be the most probative and cogent evidence of nonobviousness in the record." *Id.*

In fact, the Federal Circuit has instructed that such evidence must be

considered. "[E]vidence on secondary considerations must have been considered prior to reaching a conclusion on obviousness/nonobviousness." *DeMaco Corp. v. F. Von Langsdorff Licensing Ltd.*, 851 F.2d 1387, 1391 (Fed. Cir. 1988), citing *Ashland Oil, Inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 306, 227 USPQ 657, 674 (Fed. Cir. 1985), *cert denied*, 475 US 1017, 106 S. Ct. 1201, (1986).

However, in order to acquire substantial significance in an obviousness decision, "evidence of objective consideration must include a nexus to the merits of the claimed invention." *Litton Systems*, 87 F.3d at 1569, citing *Cable Electric Products v Genmark, Inc.*, 770 F.2d 1015, 1026, 226 USPQ 881, 887 (Fed. Cir. 1985). Further in this regard, the Federal Circuit has instructed that:

When a patentee asserts that commercial success supports its contention of nonobviousness, there must of course be a sufficient relationship between the commercial success and the patented invention. The term "nexus" is often used, in this context, to designate a legally and factually sufficient connection between the proven success and the patented invention, such that the objective evidence should be considered in the determination of nonobviousness.

DeMaco Corp., 851 F.2d 1392. Most recently, the Federal Circuit has further explained the nexus requirement as:

When a patentee can demonstrate commercial success, usually shown by significant sales in a relative market, and that the successful product is the invention disclosed and claimed in the patent, it is presumed that the commercial success is due to the patented invention.

JT Eaton & Co. v Atlantic Paste and Glue Co., 106 F.3d 1563, 1571 (Fed. Cir. 1997), citing *DeMaco Corp.*, 851 F. 2d 1387, 1392-93.

As previously noted, the present invention relates to a multi-layered golf ball comprising covers that have a hard inner layer and a relatively soft outer layer. The improved multi-layer golf balls provide enhanced distance and durability properties, while at the same time offering the "feel" and spin characteristics

associated with soft balata and balata-like covers known in the art.

The pending claims recite, in part, a golf ball comprising (i) a core, (ii) an inner cover layer molded on the core, and (iii) an outer cover layer molded on the inner cover layer. The pending claims also recite specific materials or characteristics for each of the layers. The pending claims recite that the outer cover layer is relatively soft. It will be appreciated that although this feature may be recited differently in various claims, it is present in all pending claims.

The commercial embodiment of the claimed invention is the Spalding Top-Flite® Strata™ golf ball. This is the ball utilized by PCA golfer Mark O'Meara to win the 1998 Masters® golf tournament and the recent 1998 British Open. See Exhibit 19.

Additionally, Spalding has experienced incredible success in terms of sales, praise within the industry, and wide-spread adoption throughout the golf industry and related fields of its Strata™ balls. Since the Strata™ ball's introduction in mid-1996, a flurry of complimentary reviews have issued. For example, turning attention to the attached copies of articles and reports from nationally renowned business and trade journals and newspapers across the country, the outstanding success of the Strata™ ball is clearly evident³. In addition, the nexus between this success and the claimed multi-layer and soft outer layer features of the Strata™ ball is apparent.

One of the first reports regarding the introduction of Top-Flite's® new multi-layered golf ball, was on May 2, 1996 in *USA Today*. See Exhibit 1. There, it is noted that the multi-layer ball comprises a super-soft cover and a firm inner layer.

GolfWeek reported on May 18, 1996 that the Strata™ ball was analogous to a golf ball with a "two-speed transmission." This was explained as, "[t]he idea here is to produce optimum distance and feel-the best of both worlds-and still adhere to the distance and velocity limits of the U.S. Golf Association." See Exhibit 2.

On June 4, 1996, *Union-News* reported a multimillion dollar three-year expansion project to increase golf ball production by Spalding.

³37 C.F.R. §1.195 requires that in order to admit exhibits or other information after a case has been appealed, a showing of good and sufficient reasons as why the information was not previously presented must be made. Accompanying this Appeal Brief is the requisite Showing Under 37 C.F.R. §1.195 For Introducing Information After Notice of Appeal.

Plans for expansion are being accelerated by the company because of the overwhelming success of a revolutionary new ball that Spalding introduced two weeks ago to the public... The demand for the ball is so great that Spalding is limiting quantities it ships to customers. Customers are limited to receiving six dozen balls per month.

See Exhibit 3.

The *Schenectady Gazette* reported on June 5, 1996 the multi-layer Strata™ as a "breakthrough technology" and which will create "extraordinary demand." See Exhibit 4.

On June 8, 1996, *GolfWeek* reported that Spalding would officially unveil the Strata™ ball on June 11. See Exhibit 5. "The new ball, called the Strata™, has a soft outer cover for spin and control, and a hard inner layer to promote distance."

On June 11, 1996 the *Avalanche-Journal* reported the introduction of Spalding's Strata™ Tour ball. In addition, it was noted that professional golfer Mark O'Meara had been using the ball for several weeks. "In that time, O'Meara has won the Greater Greensboro and Memorial tournaments, finishing second at the MCI Heritage and Kemper Open. O'Meara is \$678,600 richer and 51-under-par since he began playing the ball." See Exhibit 6.

On June 20, 1996, the *Boston Globe* noted that the range at the US Open for that year was stocked daily with 100 dozen Top-Flite® Strata™ balls. See Exhibit 7.

On June 20, 1996, the *Atlanta Business Chronicle* reported the "new generation" of golf balls available from Spalding under the Top-Flite® Strata™ designation. See Exhibit 8.

The *Business Review*, June 30, 1996, printed the headline "Emerging technology for multi-layer golf balls drives expansion of Gloversville Spalding plant". See Exhibit 9.

The *Register Citizen* of Torrington, Connecticut, on July 21, 1996, reported "New clubs, ball add distance, control". Specifically, it was reported that:

'People really into the game are
always in search of the ultimate,' Torrington

Country Club pro Tom Lavinio said. 'And they're buying it. You can hit the ball further with it.'

As for the ball, Spalding's latest is constructed differently and can be made to behave a lot like a balata ball, allowing the use of backspin, among other things.

'It has a better cover,' Lavinio said. 'It's softer and players are looking for a soft cover because it gives them more control. The hard cover balls just don't do what you want them to some times.'

* * *

Spalding's new ball has two covers, an inner hard one and a softer outer one, unlike a regular ball which has a core and a molded cover on it. When you hit the ball hard, the outer cover compresses, allowing the ball to be hit further.

See Exhibit 10.

BusinessWeek reported, on July 29, 1996, in an article entitled, "The Belle of the Golf Balls", that "the Strata's™ patented three-layer construction has won raves from serious golfers because, they say, it has dual qualities that are seldom found in a single ball: It both handles well on the green, and most important, it soars far on the fairway. " See Exhibit 11.

The August 1996 edition of *Golf Digest* reported recent winnings by golf pros using Top-Flite's® Strata™ Tour golf ball. The article attributed the success of that ball, among several others, as stemming from the use of multiple layers:

Top-Flite's® three-piece Strata™ Tour is similar to a two-piece ball (core and cover) but differs in that it, too, includes an inner cover, or mantle. Top-Flite® calls this process "multi-layering,"... The Strata™ Tour was designed specifically for low-handicap players and for high performance from 50 yards and in.

See Exhibit 12.

The Wall Street Journal reported on August 16, 1996, the ever-increasing price of golf balls. Although somewhat "biting" of the golf industry in general, the Journal did admit:

[I]t's [Spalding's Top-Flight Strata™ is] so hot its entire production is sold out through September; dozens of touring pros are begging for samples; golfers are breaking into other golfers' lockers and stealing them, and offering \$300 a dozen, under the table, for them. (Actually, Pro Golf Discount in Bangor, Maine, among other retailers has already slashed its price to \$40 a dozen.)

See Exhibit 13.

The *Los Angeles Times* reported on September 30, 1996, that Spalding's Top-Flite® Strata™ blends distance and control characteristics in one ball. See Exhibit 14.

On February 12, 1997, *USA Today* reported additional wins by professional golfer Mark O'Meara in addition to adoption of the Top-Flite® Strata™ ball by other professional golfers:

Mark O'Meara has become a good salesman for Top-Flite®, even though the only thing showy about him is the scores he's shooting on the PGA Tour.

Eight months ago he was the only Tour player using the Strata™ Tour ball. Now there are about 35. Total sales of the ball are nearly \$20 million.

* * *

O'Meara said he was "a guinea pig" when Top-Flite® came to him last spring with the idea of playing their new three-piece golf ball that was supposed to combine the best properties of a solid ball and a wound ball.

In the last 13 months O'Meara has earned \$1.9 million on Tour.

He has won back-to-back events -

the Pebble Beach (Calif.) National Pro-Am and Buick Invitational - and leads the PGA Tour in earnings with \$710,460 in four events.

O'Meara's success since switching puts him in an unusual position.

See Exhibit 15.

Similarly, *Golf World* reported the success of O'Meara since using the Top-Flite® Strata™ ball. See Exhibit 16.

In an article entitled, "Full Metal Jacket, Golf ball performance reaches new levels with the advent of metal construction and multiple layers", published in July of 1998 in *Golf Tips*, the Top-Flite® Strata™ Tour was again praised. On page 71 of the article, it was noted, "Top-Flite® Strata™ Tour the first multilayer ball to gain significant acceptance on the PGA Tour." And on page 73 this success was described as follows.

A testament to the Strata's™ performance characteristics is the unprecedented Tour acceptance it has achieved for a non-wound golf ball. A notable example of a Tour player using the Strata™ is Mark O'Meara, who played it in his win at the Masters earlier this year.

See Exhibit 17.

Top-Flite's® website includes additional information as to the industry-wide acceptance of the Strata™ Tour:

Dozens of professionals worldwide have already switched to the new Top-Flite® Strata™ Tour, including former wound ball players Mark O'Meara and Jay Don Blake. And the results have been impressive. Since switching to Strata™ Tour, O'Meara has reached the top 5 on the PGA Tour in money, in scoring, in greens in regulation and in birdies. Strata™ Tour has also recorded numerous Tour victories in its first year such as: O'Meara's win at Greensboro, D.A. Weibring's GHO victory, Walt Morgan's first place honors at the

SPGA Ameritech, not to mention several international wins.

These accomplishments and the multilayer construction of the Strata™ Tour are explained in greater detail in the accompanying pages of the website. See Exhibit 18.

The foregoing information clearly evidences the incredible success of the Strata™ Tour ball, that is, the commercial embodiment of the presently claimed invention. It is respectfully submitted that the pending claims recite patentable subject matter.

Accordingly, it is respectfully requested that the Examiner's 35 U.S.C. § 103 rejection be reversed.

Respectfully submitted,

FAY, SHARPE, BEALL,
FAGAN, MINNICH & McKEE



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IX Appendix of Claims (37 C.F.R. § 1.192(c)(9))

1. A golf ball comprising:

 a core;

 an inner cover layer molded on said core, the inner cover layer comprising a high acid ionomer including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid; and

 an outer cover layer molded on said inner cover layer, said outer cover layer comprising a relatively soft polymeric material selected from the group consisting of low flexural modulus ionomer resins and non-ionomeric thermoplastic elastomers.

2. A golf ball according to claim 1 wherein the inner cover layer comprises a high acid ionomer resin comprising a copolymer of about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid.

3. A golf ball according to claim 1 wherein the inner cover layer comprises a high acid ionomer resin comprising a copolymer of about 18.5% to about 21.5% by weight of an alpha, beta-unsaturated carboxylic acid.

4. A golf ball according to claim 1, wherein the inner cover layer has a thickness of about 0.100 to about 0.010 inches and the outer cover layer has a thickness of about 0.010 to about 0.05 inches, the golf ball having an overall diameter of 1.680 inches or more.

5. A golf ball according to claim 1 wherein the inner cover layer has a thickness of about 0.300 inches and the outer cover layer has a thickness of about 0.375 inches, the golf ball having an overall diameter of 1.680 inches or more.

6. A golf ball according to claim 1 wherein the outer layer comprises a low flexural modulus ionomer resin which includes a blend of a hard high modulus ionomer with a soft low modulus ionomer, the high modulus ionomer being a sodium, zinc, magnesium or lithium salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, the low modulus ionomer being a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms.

7. A golf ball according to claim 6 wherein the outer layer composition includes 90 to 10 percent by weight of the hard high modulus ionomer resin and about 10 to 90 percent by weight of the soft low modulus ionomer resin.

8. A golf ball according to claim 6 wherein the outer layer recomposition includes 75 to 25 percent by weight of the hard high modulus ionomer resin and about 25 to 75 percent by weight of the soft low modulus ionomer resin.

9. A golf ball according to claim 1 wherein the non-ionomeric thermoplastic elastomer is a polyester polyurethane.

10. A golf ball according to claim 1 wherein the non-ionomeric thermoplastic elastomer is a polyester elastomer.

11. A golf ball according to claim 1 wherein the non-ionomeric thermoplastic elastomer is a polyester amide.

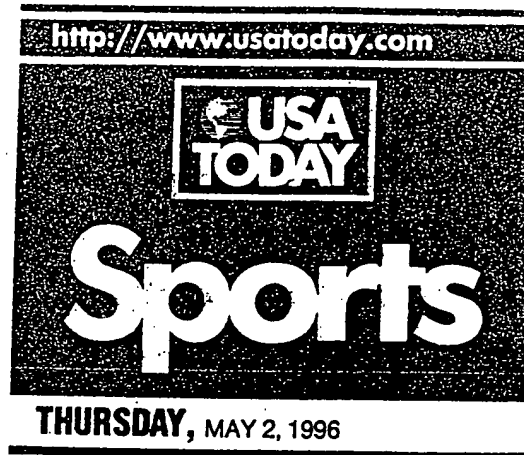
12. A multi-layer golf ball comprising:
a spherical core;
an inner cover layer molded over said spherical core, said inner cover layer comprising an ionomeric resin including at least 16% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;
an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a blend of i) a sodium or zinc salt of a copolymer having from 2 to 8 carbon atoms and an unsaturated monocarboxylic acid having from 3 to 8 carbon atoms, and ii) a sodium or zinc salt of a terpolymer of an olefin having 2 to 8 carbon atoms, acrylic acid and an unsaturated monomer of the acrylate ester class having from 1 to 21 carbon atoms, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

13. A multi-layer golf ball comprising:
a spherical core;
an inner cover layer molded over said spherical core to form a spherical intermediate ball, said inner cover layer comprising an ionomeric resin

including about 17% to about 25% by weight of an alpha, beta-unsaturated carboxylic acid and having a modulus of from about 15,000 to about 70,000 psi;

an outer cover layer molded over said spherical intermediate ball to form a multi-layer golf ball, the outer layer comprising a non-ionomeric thermoplastic selected from the group consisting of polyester elastomer, polyester polyurethane and polyester amide, said outer cover layer having a modulus in a range of about 1,000 to about 30,000 psi.

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Top-Flite will sell multilayer golf ball

By Don Cronin
USA TODAY

Golfers no longer must choose only between wound or two-piece golf balls.

Top-Flite soon will market a multilayer ball it says combines the best of both.

"When I'm pitching or putting, the ball reacts very softly, like a wound ball," says Mark O'Meara, who used the ball finishing second April 21 at Hilton Head Island, S.C., and winning Sunday at Greensboro, N.C., to earn \$475,200 the last two weeks on the PGA Tour.

"When I hit it off the tee, it feels harder. When it hits the ground, it rolls farther."

Spalding, Top-Flite's parent company, patented multilayer golf ball construction in 1984.

"But not until the last cou-

ple of years were we able to put it all together," said Mike Sullivan, Top-Flite's senior director of research.

"This ball does things neither a wound nor a two-piece ball can do. It has the feel of a wound ball — high spin on short shots with lofted irons — but the distance of a two-piece ball off the tee.

"We call it a 'spin on demand' product."

This model, at \$35 a dozen, is designed for pros and low-handicap amateurs, but models for higher handicap players will follow.

"We can use multilayer construction to customize balls for players of all skill levels," said Scott Creelman, senior vice president of golf products.

► Ball comparisons, 14C

Top-Flite's layered look

Combining the qualities of wound and two-piece golf balls, Top-Flite is introducing a new ball. The multi-layer ZS Balata covered ball is designed to deliver superior distance, unequalled spin control and the feel of a soft cover.

ZS BALATA

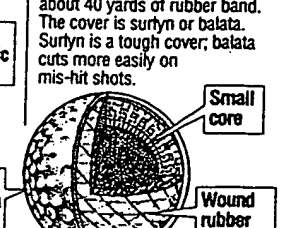
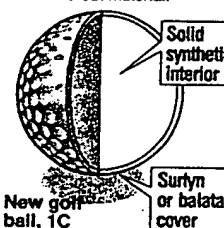
Super-soft ZS balata cover for highest spin

Firm inner layer for maximum distance

Soft high-energy core

The two-piece ball has no small core or winding. The interior is a solid synthetic material. The cover usually is surlyn or some other synthetic, difficult-to-cut material.

The three-piece ball has a small spherical core that is solid, or hollow and filled with fluid. Around the core is wound about 40 yards of rubber band. The cover is surlyn or balata. Surlyn is a tough cover; balata cuts more easily on mis-hit shots.



Source: Top-Flite Golf

GOLFWEEK

May 18, 1996

PERSPECTIVE

Balls with 2-speed transmission too smart

I had a dream the other night. I was playing in the U.S. Open and — are you ready for this? — I was *talking* to my golf ball.

"Launch angle, 31 degrees." I was saying as I stood on the tee. "Backspin, minimal. Sidespin, none. Initial velocity, 255 feet per second. Total distance, 296 yards."

Kaboom! My ball exploded off the clubface, accelerated powerfully through its take-off and landed flawlessly in the fairway.

"It's that new ball from Nike called the Talking Brain." Johnny Miller was explaining to a worldwide television audience. "Nike has been remarkably aggressive since acquiring Spalding and its Top-Flite line. This new ball does whatever you tell it to do — within the rules, of course. It's kind of expensive, though. A dozen costs \$2,400 at Montana Bob's."

I woke up before I won the U.S. Open, but it was inevitable.

What's up with golf balls, anyway? All of a sudden, we are hearing about four-piece balls and double-cover balls (Bridgestone) and multilayer balls (Top-Flite). Players like Nick Faldo and Mark O'Meara are using them to win tournaments, but they aren't yet available to you and me. Top-Flite hasn't even announced a name for its ball.

At least Titleist was ready with a large supply of the two-piece HP2 Tour once the new ball started making headlines earlier this year. Consumers didn't have to wait.

But let's give Bridgestone and Spalding a break. They didn't expect us to beat down their doors, demanding to play a ball before its scheduled release. But we, the golfers of America, seem to be ravenous for anything new.

Earlier this month I had a luncheon meeting with Hank Rojas, president of Bridgestone. I

asked him what I thought were the obvious questions. "How in the world can a ball have two covers? When can we purchase the ball that Faldo used to win the Masters?"

The answer to the second

JAMES ACHENBACH

question is clear: before the end of the year, Bridgestone appears to have blown this one, because the curiosity and demand are here, thanks to Faldo, but the ball isn't. It is sold only in Japan.

When it comes to golf balls in Japan, Bridgestone and Dunlop are the Big 2 — the Titleist and Top-Flite of Japanese golf, if you will. Bridgestone, with 6 percent of the U.S. golf ball market, controls about 40 percent of Japanese ball sales.

What about this double-cover mumbo jumbo? It's a convenient way to describe a ball, even if it isn't accurate. The new Bridgestone ball, which will be called Precept Tour in this country, has a cover stock on the outside and a second layer of rigid, undimpled material on the inside (this is also true of the new Top-Flite ball).

The Precept Tour has a solid center surrounded by windings. Add the cover and the interior layer and — whammo — there are four pieces.

The Top-Flite ball, used by O'Meara to win the Greater Greensboro Chrysler Classic, has three pieces. There is the solid core, plus the cover and inner layer. The ball should be available in July.

According to the tour players who have used them, both balls have a soft, balatalike

feel. Both will be promoted with a story that sounds too good to be true — less spin off the driver, more spin with the short irons. How can this be?

I called Rick Watson, director of golf ball marketing for Top-Flite, and got what might be the quote of the year: "It's like a golf ball with a two-speed transmission."

I know, I know. What if your game gets stuck in first gear?

"From 100 yards and in," said Watson. "where better players tell you they need the

balls to kick in for them, the soft cover gets pinched against the inner layer and creates a high spin rate."

Hmmm.

The idea here is to produce optimum distance and feel — the best of both worlds — and still adhere to the distance and velocity limits of the U.S. Golf Association (both new balls already have been approved by the USGA). "We're getting closer to the perfect golf ball," Watson said.

Which doesn't mean that tour players will switch en masse to the new balls. Nick Price and Raymond Floyd will continue to use the Precept EV Extra Spin, and Craig Stadler and Payne Stewart will stay with the Top-Flite Z-Balata. According to Watson, the new Top-Flite ball has a slightly lower trajectory than the Z-Balata.

The new balls from both companies probably will carry a discounted street price of about \$40 a dozen.

All this, of course, is a prelude to the Talking Brain. We have seen the future, and it is very smart. Too smart, if you ask me.



UNION-NEWS

JUNE 4, 1996

Spalding: New golf ball a big hit

Continued from Page A1

turing/procurement.

The ball's construction is designed to give the golfer more distance and more control.

Spalding officials wouldn't comment on an exact dollar figure for the expansion or how many jobs will be created as a result.

"Top-Flite's worldwide market share is continuing to grow. This expansion is necessary to support our growth and, in particular, our exciting new multi-layered technology," said Scott Creelman, senior vice president of golf products worldwide.

The increase in production capacity will be spread over Spalding's Chicopee and Gloversville, N.Y., plants. However, what proportion of the 40 percent increase will take place at each plant has not been determined as Spalding officials rush to complete plans.

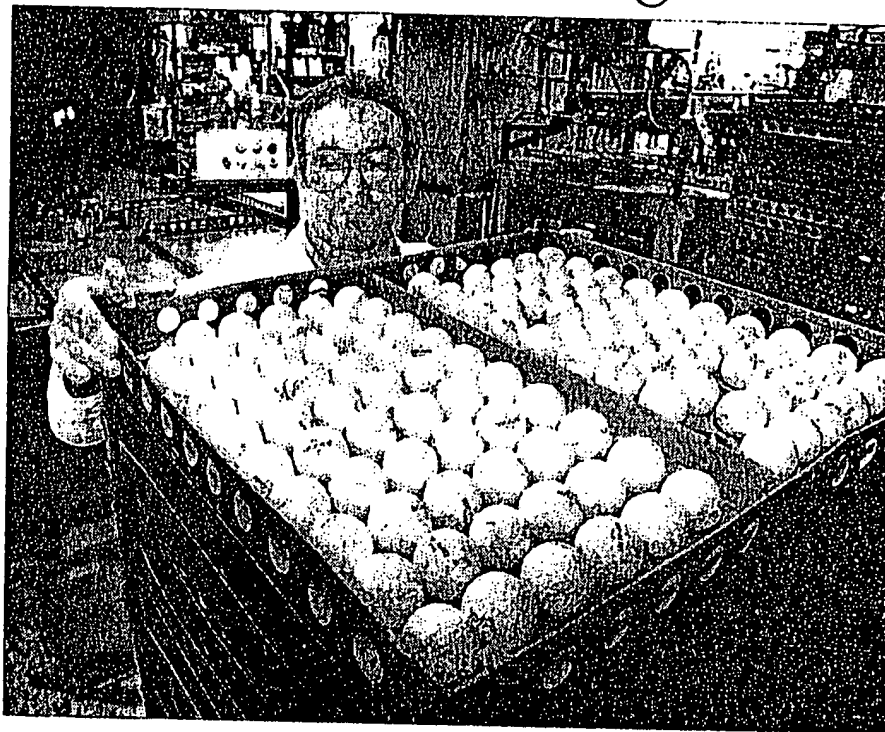
"A lot depends on the growth of the whole golf products family and what products we intend to grow," said Brisbois.

Each plant is expected to be expanded by about 25,000 square feet. The Chicopee plant, which includes offices, manufacturing and warehousing, is currently 700,000 square feet. The Chicopee plant has a 1,000-person workforce, 600 of whom are production workers.

The Gloversville plant is 116,000 square feet and employs 180 people.

Meanwhile, Spalding remains on the selling block. Parent company The Cisneros Group of Venezuela announced last month that it was selling its Spalding and Evenflo divisions to concentrate on its telecommunications business. The sale is expected be a six- to nine-month process.

Spalding, which markets its golf balls under the Top-Flite brand name, is the self-proclaimed No. 1 golf ball manufacturer in the world. Its \$1 million golf ball challenge, which offered



Spalding employee Avelino Santos stacks a batch of golf balls at the company's Chicopee plant. The company yesterday announced a three-year expansion project that will increase golf ball production by 40 percent at the company's two golf ball plants.

\$1 million to any company that could prove it sells more balls than Spalding, went unchallenged.

Spalding believes that the 25 million dozen golf balls it sells annually represents 33 percent of the world's golf ball market. Spalding's share of the golf ball market has been growing at a pace in which it believes it can own 50 percent of the world market by 2000.

The three-year expansion plan was designed based upon growth rate before the introduction of the Top-Flite Strata.

"This will probably be one of the most successful products that Spalding has ever launched," said Vaughn Rist, a Spalding spokesman. The Strata introduced a new ball construction in the golf ball industry with its three layers. Golf balls have been a two-layer unit with a core and a covering. The Strata ball has a large, soft high-energy core that is surrounded by a hard middle layer that Spalding claims adds distance.

The outermost covering is made of a soft balata material

that is designed to generate spin.

In the two-layer construction, the covering materials are varied to give the ball different playing qualities. Hard covers provide more distance and less control. Soft coverings provide more control less distance.

Strata's construction combined both control and distance, according to Spalding officials.

The Chicopee plant manufactures an average of 72,000 golf balls per day and operates its production three shifts per day six days a week.

UNION-NEWS

JUNE 4, 1996

Having a ball



Union-News file photo by JOHN SUCHOCKI

Joao Henriques inspects golf balls as they leave the curing oven last fall at Spalding Sports Worldwide in Chicopee. Spalding yesterday announced plans to expand golf ball production by 40 percent at its two golf ball plants.

Spalding speeds up expansion plan

Demand for its new golf ball — Top-Flite Strata — has speeded up the timetable for expansion by Spalding Sports Worldwide.

By BILL ZAJAC

Staff writer

CHICOPEE — A multi-million dollar, three-year expansion project that will increase golf ball production by 40 percent in

its two plants was announced yesterday by Spalding Sports Worldwide.

The plans for expansion are being accelerated by the company because of the overwhelming success of a revolutionary new ball that Spalding introduced

two weeks ago to the public.

The expansion was to begin in January 1997, but it will begin next month instead because of the demand for Spalding's Top-Flite Strata.

The new, multi-layered ball was to be introduced next week at the U.S. Open, but questions about it arose within the golf industry when PGA Tour player Mark O'Meara won the Greater Greensboro Chrysler Classic April 28.

At the time, Spalding released some information on the ball but wouldn't reveal its name until its introduction.

The demand for the ball is so great that Spalding is limiting quantities it ships to customers. Customers are limited to receiving six dozen balls per month.

"We can't make these balls fast enough," said Michael Brisbois, vice president of manufac-

Please see Spalding, Page B11

SCHENECTADY GAZETTE

JUNE 5, 1996

Spalding factory to grow

By JIM MCGUIRE
Gazette Reporter

GLOVERSVILLE — Spalding Sports Worldwide will expand its Gloversville golf ball factory to produce its new Top-Flite Strata ball.

The project was presented Tuesday to the Fulton County Industrial Development Agency, which voted to sell Spalding over five acres adjacent to the existing 34,440-square-foot plant in Crossroads Industrial Park.

The 19,000-to 25,000-square-foot expansion, scheduled for completion in December, will cost about \$1.5 million and will create more than 30 new jobs, the IDA board was told. Spalding, which also operates a golf club manufacturing plant next to the golf ball factory, currently employs a total of 147 people.

Spalding Worldwide Sports, owned by The Cisneros Group of Venezuela, is for sale. But Fulton County economic development officials said they were told the possible sale will not affect the Gloversville expansion project.

Staffing levels at Spalding in Gloversville have exceeded 200 with seasonal work fluctuations, said Peter A. Sciocchetti, vice president for marketing of the Fulton County Economic Development Corp.

Sciocchetti said Spalding is investing millions of dollars above the cost of construction in the installation of two new production lines for its Strata ball and replacement of the existing three production lines for its other Top-Flite models.

"They [Spalding officials] think this new ball is going to be state of the art," Sciocchetti said. Construction is scheduled to start in early July, he said.

Spalding executives could not be reached Tuesday for comment, but a news release issued by the company described the multilayer Strata as a "breakthrough technology" that will create "extraordinary demand" and the need for a "major multimillion dollar expansion of production capacity."

The Gloversville expansion is part of a three-year program designed to increase production by 40 percent, the news release said. A 25,000-square-foot addition will be built in Chicopee, Mass., its headquarters, but Sciocchetti said all Strata production will take place in Gloversville.

Spalding, which opened its first factory in Gloversville in 1988, has held an option to buy the additional land for \$10,000 per acre. That deal was authorized Tuesday by the IDA board.

The addition will be built on the west side of the existing plant. Sciocchetti said Spalding may have more than 230 employees in Gloversville in the near future.

GOLF WEEK

JUNE 8, 1996

Top-Flite to unveil Strata ball June 11

Spalding's Top-Flite division will officially unveil its new multilayer ball June 11. The new ball, called the **Strata**, has a soft outer cover for spin and control, and a hard inner layer to promote distance. Suggested retail will be \$52 per dozen. PGA Tour pro Mark O'Meara has been playing the ball since April.

Rick Watson, Top-Flite's golf ball marketing director, said Top-Flite has had a patent on a multilayer ball since 1984. "We were very patient in bringing out the product," he said, citing more than a decade of product development.

AVALANCHE-JOURNAL

JUNE 12, 1996

U.S. Open notes

■ Spalding is using the U.S. Open to begin marketing a new golf ball. But the multi-layer Top-Flight Strata Tour already had quite a launch before the launch, so to speak.

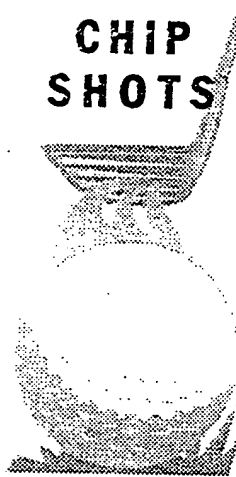
Touring pro Mark O'Meara has been using the ball for several weeks.

In that time, O'Meara has won the Greater Greensboro and Memorial tournaments, finishing second at the MCI Heritage and Kemper Open. O'Meara is \$678,600 richer and 51-under-par since he began playing the ball.

According to Spalding, the multi-layer design of the ball — designed for pros and top-level amateurs — combines a soft Balata cover with a firm inner layer and high-energy core. But it isn't cheap. The suggested retail price is \$52 per dozen.

BOSTON GLOBE

JUNE 20, 1996



GOLF BALL numbers for you to digest over morning coffee. According to Associated Press, the range at the US Open was stocked daily with 686 dozen Titleists, 300 dozen maxflis and 100 dozen Top-Flite Stratus. Workers at the range said each of 10 sweeps made daily picked up some 200 dozen golf balls, meaning 240,000 balls were struck daily. And who was the best customer? Tiger Woods reportedly hit more than 400 balls on each visit.

ATLANTA BUSINESS CHRONICLE

JUNE 20, 1996

New generation

The two-camp world of golf balls — those who prefer wound balls and those who prefer two-piece — may be coming to an end. Top-Flite soon will market a multilayer ball it says will combine the best of both worlds.

Spalding, Top-Flite's parent company, patented multi-layer golf ball construction in 1984.

"But not until the last couple of years were we able to put it all together," says Mike Sullivan, senior director of research at Top-Flite. "This ball does things neither a wound nor a two-piece ball can do. It has the feel of a wound ball — but the distance of a two-piece ball off the tee.

"We call it a 'spin on demand' product."

This model, at \$35 a dozen, is designed for pros and low-handicap amateurs, but models for higher-handicap players will follow.

BUSINESS REVIEW

JUNE 30, 1996

Emerging technology for multi-layer golf balls drives expansion of Gloversville Spalding plant

By MICHAEL FARRELL

Spalding Sports Worldwide Inc. plans to build a 25,000-square-foot addition to a facility in Crossroads Industrial Park in Gloversville.

The company already has a 34,440-square-foot golf ball factory in the park, as well as an 80,000-square-foot plant that makes golf clubs. The addition is being proposed to accommodate production of a new multi-layer golf ball called the Top-Flite Strata. The addition will cost about \$1.5 million, with construction expected to begin in July.

"Top-Flite's worldwide market share continues to grow," Scott Creelman, senior vice president for golf products worldwide, said in a prepared release. "This expansion is necessary to support our growth and, in particular, our exciting new multi-layer technology."

The three-year expansion plan—which also includes a 25,000-square-foot addition to

the company's manufacturing and headquarters facility in Chicopee, Mass.—is expected to increase existing capacity by 40 percent.

Spalding Sports also will invest millions more to revamp production lines and purchase new equipment for the Gloversville plant. When the local building is completed in December, it will be the only Spalding factory manufacturing the Strata line.

"Spalding's presence in our community continues to grow with undaunting commitment," Jeffrey Bray, executive vice president of the Fulton County Economic Development Corp., said in a prepared release. "Spalding's continued expansion speaks volumes regarding the ability to do business in Fulton County."

Spalding already employs about 200 seasonal workers at the Gloversville factories. The company expects to hire an additional 30 people after the addition is completed.

REGISTER CITIZEN

TORRINGTON, CT JULY 21, 1996

New clubs, ball add distance, control

Looking to smack the ball a little farther? Want to make the ball dance for you around or on the green?

Apparently so, because two of the more popular innovations in golf equipment these days can help you do both.

For those who want that John Daly feeling off the tee, titanium head drivers have become the club to have. And for those who want that Corey Pavin touch with the ball, a new ball, the Spalding Strata, is the hot thing.

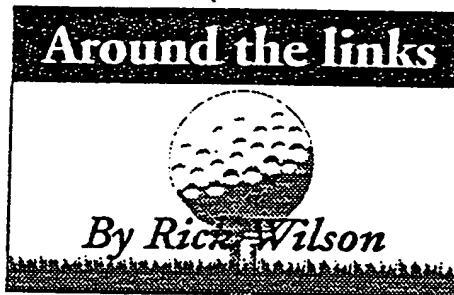
"Titanium is in, in a big way. It's supposed to be stronger than steel and lighter," Green Woods Country Club pro Dave Dell said.

"People really into the game are always in search of the ultimate," Torrington Country Club pro Tom Lavinio said. "And they're buying it. You can hit the ball further with it."

As for the ball, Spalding's latest is constructed differently and can be made to behave a lot like a balata ball, allowing the use of backspin, among other things.

"It has a better cover," Lavinio said. "It's softer and players are looking for a soft cover because it gives them more control. The hard cover balls just don't do what you want them to some times."

The titanium drivers are lighter than a normal driver, but stronger. Therefore the heads can be made bigger with a bigger sweet spot. The idea is to be able to bring the head through



faster and hit the ball further.

"All the major manufacturers — Taylor Made, Big Bertha (Callaway), etc. — have stainless steel oversized heads and titanium heads," Dell said. "You have to make sure that you don't get a copycat. A lot of companies are using a titanium alloy and selling the club for a cheaper price. There's no question it is inferior."

Will the titanium head improve your game? Probably. But for the average golfer, more practice on the swing instead of worrying about what's being swung may be the answer.

"(The average golfer) might see a slight improvement," Dell said. "But, it just makes the game a little more fun. It makes the equipment a little more exciting to use."

Titanium head drivers are running from \$250-\$400, making it hard for the average golfer to buy one, anyway.

Spalding's new ball has two covers, an inner hard one and a softer outer one, unlike a regular ball which has a core and a molded cover on it. When you hit the ball hard, the outer cover

compresses, allowing the ball to be hit further.

Around the green on a delicate shot, the club just hits the outside cover, allowing for a lot of spin and control.

"I was using a Titleist Tour and I switched," Lavinio said. "My tee shot goes 10-15 yards further and the ball is very good around the green."

The Strata is not cheap. A sleeve of three balls cost between \$10-15 while a dozen can go from \$40 to \$55.

"Usually you can get them in most pro shops, but they are hard to get," Dell said. "(The companies) can't keep up with the demand."

BusinessWeek

JULY 29, 1996

A PUBLICATION OF THE MCGRAW-HILL COMPANIES

\$3.50

PRODUCT PEEK

THE BELLE OF THE GOLF BALLS

THEY'RE FLYING OFF THE shelves as fast as they are off the tee. At \$3 each, Top-Flite's new Strata balls, which appeared in June, cost



\$3 APIECE: *But sales are brisk*

three times as much as regular golf balls. Still, pro shops are hard put to keep them in stock.

Spalding-owned Top-Flite hopes the Strata's popularity will boost the company's No. 2 market share in high-end balls from 20% to 30% by next summer, overtaking leader Titleist. Used by pros and low-handicap golfers, the hardy balls are one-third of the \$602 million golf-ball market, making them the

Double covers, multiple layers enter the ball market

Could this be a trend? Mark O'Meara wins twice on the PGA Tour with two different golf balls. O'Meara plays a wound, three-piece Titleist Tour Balata to win the season-opening Mercedes Championship and 16 weeks later wins the Greater Greensboro Chrysler Classic using Top-Flite's new Strata Tour, a three-piece, solid-core ball made with what the company calls "multi-layer technology."

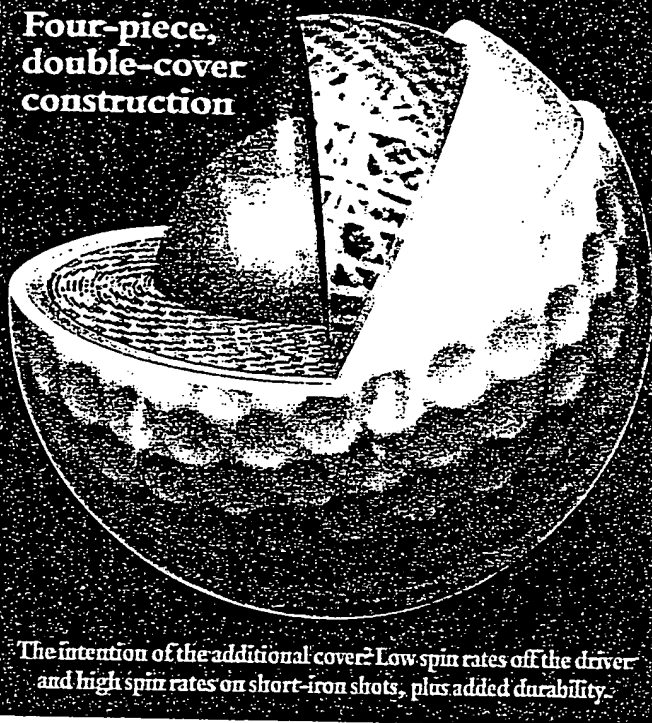
Corey Pavin won the 1995 U.S. Open with a Titleist Tour Balata and then added a victory several months later at the Nedbank Million Dollar Challenge in South Africa playing Titleist's new two-piece ball, the HP2 Tour.

What gives here? Are golf balls so similar that the top players in the world can win from week to week using different models?

"You had huge trade-offs between balls before," says Hank Rojas, the president of Bridgestone, one of the game's major ball manufacturers. "Now the trade-offs are not quite as big."

The various balls played by 1996 PGA Tour winners emphasize this broadening of the marketplace. As of the Memorial Tournament (21 events), three types of wound, three-piece balls accounted for 15 victories. Four types of high-spin two-piece balls accounted for four wins and the remaining two victories came via new entries—Bridgestone's four-piece ball and Top-Flite's Strata Tour. That's four different construction methods but *nine* different models. That kind of variety was unthinkable just a decade ago.

"Each ball out here has its own great characteristic," says Lee Janzen, who has played Top-Flite, Titleist and Bridgestone balls during his career. "It's

Four-piece,
double-cover
construction

The intention of the additional cover? Low spin rates off the driver and high spin rates on short-iron shots, plus added durability.

really up to the individual player as to what he's looking for in a ball. Someone who hits a low ball wants a ball with a lot of spin while somebody like Greg Norman, who hits it very high, doesn't want a ball that spins a lot. Most balls have certain little things that make each of them different from the next."

The new Bridgestone and Top-Flite balls are the latest entries in the market that attempt to perfect the feel, distance and durability equation.

Bridgestone's new Precept Tour, which will be available this fall, is a wound, four-piece ball that Nick Faldo used to win the Masters this spring. The ball is similar to a traditional wound, three-piece ball (core, windings, cover) except that Bridgestone has added a smooth, inner cover, or mantle, under the outside cover. Call it double-cover technology.

"The wound part of the ball is not quite as big as that of a traditional three-piece balata ball," says Rojas. "It's de-

signed to feel like a balata ball but give you the distance and consistency of a two-piece." Comparing the Precept Tour with another Bridgestone high-performance ball, the two-piece Precept EV Extra Spin, Rojas says the four-piece ball is "softer and spins a little more but may be a little shorter. Its roundness holds up a little better, and it is more consistent over a longer period."

Top-Flite's three-piece Strata Tour is similar to a two-piece ball (core and cover) but differs in that it, too, includes an inner cover, or mantle. Top-Flite calls this process "multi-layering," which is similar to the way Wilson manufactures its Ultra 500 series of balls. The Strata Tour was designed specifically for low-handicap players and for high performance from 50

yards and in, according to Mike Sullivan, senior director of research for Spalding.

"The relative hardness between the layers enables you to tailor the spin characteristics of the ball," says Ralph Peterson, manager of research and development at Wilson. "You can make it a high-spinning ball or a low-spinning



The multi-layer ball
High-spinning accuracy near the green
is also a feature of this design.

THE WALL STREET JOURNAL

MARKETPLACE

SPORTS

The Ball Is Golf's Last (Cheap) Holdout

By JAMES P. STERBA
Staff Reporter of THE WALL STREET JOURNAL

CONSIDER THE GOLF BALL. It's the single most popular good in sporting goods, an international roll model. Flight model, too. No orb in sports soars with its ubiquity, or ambiguity. Its arc is a study between celestial grace and farcical kerfloperty. But where is this damnably beloved sphere coming from, where is it going, and where do those who control its fate want it to go? ("In the hole," is an unacceptable answer for treatises at this level!)

Last year, by one estimate, golf balls sold world-wide at a rate of about 2.3 million per day; roughly \$31.6 million in all. Two-thirds were bought in the U.S. Excluding cheap driving-range balls, the average retail price was about \$2.50. But they can be had for as little as \$1.25. This, for the golf industry, is the rub: They're too cheap!

No industry in sports has pushed hyperbole's envelope more in recent years trying to convince its players that they can buy a better game. With the number of U.S. golfers stuck at 25 million since 1991 (annual growth: 0.2%, says the National Golf Foundation) equipment makers want golfers to trade up, and often. Their mantra: The more you pay, the better you'll play. It's worked, to some extent, for clubs, fees, shoes and clothes. But not for balls.

In the past decade, ball makers have labored mightily to transmute their humble sphere: they reconstituted its internal organs with highly scientific (and secret) plastic gunk. They thickened, thinned, layered its skin. Its body went oversize and underweight. Its dimpled face got more lifts than Phyllis Diller's. It was tarted up like a Flappy Hooker (to be fair, we know of no happy slicers). It was made mysterious and "dangerous." It was designed by rocket scientists. It was turned from a ball into a "system."

In 1985, only 147 separate balls (made by 23 companies in eight countries) were listed as "conforming" to golf's official rules. Last year, more than 1,500 different balls (made by 84 firms in 13 countries) were on the list. (An unlisted ball can't be used in sanctioned tournaments; pro Greg Norman disqualified himself from one in June when he discovered his Maxfli ball was stamped XS-9 instead of the listed XS-90.)

So far, the golf ball remains immune to all forms of chicanery. It is a tribute to the free enterprise system—a thousand flavors of vanilla. Today, a golfer can pay \$150 for greens fees, \$100 for a golf shirt, \$175 for shoes and \$1,000 for a titanium driver, and then step up to the first tee and, too often, pull out a ball that cost all of a buck and a quarter.

Oh, the shame of it! Golf balls are cheap to buy because they're easy to make (as little as 33 cents apiece, by one estimate). Competition is fierce. Creating cheap-ball angst that can be assuaged with expensive balls isn't easy. Generics dictate: Golf balls come in two basic varieties, three-piece, the kind that 95% of professional golfers

use, and two-piece, which 86% of other golfers use.

The three-piece ball has a solid or liquid center tightly wound with rubber threads; most are covered with synthetic balata (the real stuff was made from a tropical tree sap). This ball evolved from a thread-wound, rubber-covered ball invented in Cleveland in 1898. (The Scots, who are credited with inventing the game, used hard leather balls stuffed with a "gentleman's top-hat full" of goose feathers for four centuries. In 1848, the first solid rubberlike ball, called a "gutta-percha," came along. It was made from evaporated tree sap from Malaya, now Malaysia.)

The three-piece ball has a short lifespan—it cuts easily and goes out of round quickly when whacked a few holes. But it has superior "feel" and "control." Pros such as Corey Pavin, who is noted for his touch on the ball, can hook, slice or add backspin to these balls at will.

The two-piece ball has a solid plastic center that looks like hardened bubblegum, and a plastic cover (usually a Surlyn blend from DuPont). First sold in 1971, it is harder and more durable, capable of lasting a summer if it doesn't find a pond first. It goes farther than a three-piece but is harder to control. Jack Nicklaus once likened it to playing with a marble. Its virtue is that it is very cheap to make—about \$4 to \$5 a dozen, says ball engineer Troy L. Puckett, president of Cayman Golf Co., maker of regular balls and a so-called outlaw ball sold as the "Desperado" (\$26.95 a dozen retail), which is smaller and heavier and can go

farther than golf's rules allow.

Those rules, enforced by the United States Golf Association and the Royal and Ancient Golf Club of St. Andrews, Scotland, say a ball can't weigh more than 1.62 ounces and can't be smaller than 1.68 inches in diameter (standards adopted in 1932). It can't have an initial velocity off the club face of more than 250 feet per second and can't travel more than 280 yards, on average, when hit with a testing machine that mimics the classic swing of former great Byron Nelson. Size wise, a blimp qualifies; weight wise, a Ping-Pong ball. Otherwise, differences are subtle.

There's dimple diversity: Balls on today's conforming list have from 318 to 552 dimples, with different sizes and depths. But balls have been made with as few as 252 and as many as 812. Dimples aid aerodynamics, pulling air over the top and creating pressure underneath, like an airplane wing, and, depending on configuration, causing the ball to fly higher, straighter, farther—or the opposite. Degrees of hardness, or compression, make the ball go farther and more difficult to control—or vice versa. Putting most of a ball's weight near its center makes it spin more, which increases control; with perimeter weighting, distance is gained.

The perfect ball would offer maximum distance and maximum control. But so far, golfers can't have both. They choose between a hard-cover two-piece for distance or a soft-cover three-piece for control, or some new cross-bred mutant that supposedly promises both. It takes a very good golfer to tell the difference between the three- and two-piece, says Frank

Thomas, the USGA's technical director. The average hacker can't, although what golfer would admit to being *average*? What happens when they shop for balls, says Mr. Thomas, is they fall for the hype, opting for balls used by their favorite pros—balls these pros not only get free but also are paid sometimes a half million dollars by ball makers to use.

Mr. Thomas watches all this with detached amusement. Today's balls are better than yesterday's, he says. Quality control is better. Fewer duds per dozen. Clubs are better, too. So, is that why today's professional superstars hit the ball so much farther and so much more accurately than in the past? This is a trick question that Mr. Thomas loves to answer. The answer: Everybody thinks they do, but they don't.

In 1968, the length of the average drive on the pro tour was 258 yards, he says. In 1995, it was 263 yards. That's an improvement of only five yards in 27 years.

The 1.9% difference is the result of the fact that both golfers and fairways are in better shape these days, he says. As for better accuracy, Mr. Thomas notes that the winning score in pro tournaments is improving at a rate of only about one stroke every 25 years.

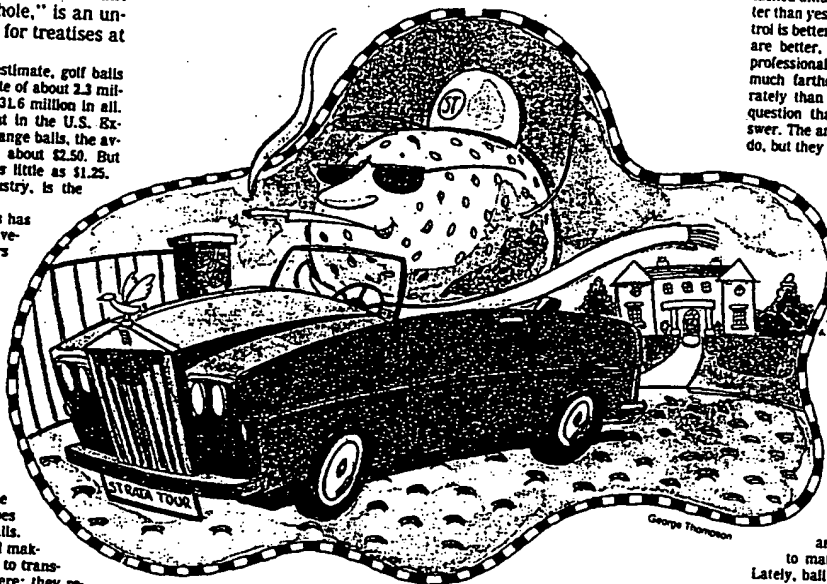
That hasn't stopped ball makers from touting each new ball-offering as truly "revolutionary"—the ball that's going to make other balls "obsolete."

Lately, ball makers are stressing that revolutions aren't cheap. Two years ago, American Brands' Acushnet Co. introduced the three-piece "Titleist Professional" at \$50 a dozen (\$4.17 each)—the most expensive ball in golf. In April, Spalding Sports Worldwide debuted the two-piece "Top-Flite Strata" at \$52 a dozen (\$4.33 each)—the new most expensive ball in golf.

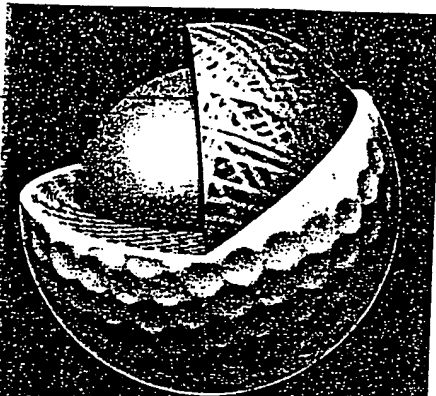
Spalding humbly calls its Top-Flite Strata debut "the most exciting product launch in recent history." A \$6 million ad campaign was part of the excitement. The idea, says Scott Creelman, Spalding's senior vice president in charge of golf products, was to "find a product the best players would switch to"; that is, a durable two-piece ball with two "covers": an inner one that's hard and makes the ball go far and an outer one that's soft and, thus, offers good spin control.

He says he can hardly believe the word-of-mouth the Strata is generating (even though it seems like most of the words are coming from his mouth). To wit: It's so hot its entire production is sold out through September; dozens of touring pros are begging for samples; golfers are breaking into other golfers' lockers and stealing them, and offering \$300 a dozen, under the table, for them. (Actually, Pro Golf Discount in Bangor, Maine, among other retailers, has already slashed its price to \$40 a dozen.)

"We see this as an opportunity to obsolete the thread-wound ball," says Mr. Creelman. His boss, George Dickerman, said of another Spalding offering called the "Tour Edition," a plastic-covered, two-piece ball: "In three or four years, we'll make balata-covered balls obsolete." That was 10 years ago. Fore!



George Thompson



Traditional three-piece, wound ball

Balata, lithium and Surlyn covers have allowed wound balls to be played by those looking for both distance and high spin.

ball, and using technology you can modify things such as spin, durability and cut resistance."

Some background information might help. A ball hit with a driver has a higher-impact velocity (it leaves the face faster) than one hit with a wedge. There are two reasons for this: greater swing speed and less loft. As you go through your bag from driver to wedge, the compression on the ball at impact decreases with each club. The harder the hit, the deeper the compression of the ball. The deeper the compression, the more the core and inner layer come into play.

According to the manufacturers of these new balls, the inner cover reduces the compression at impact so that the ball jumps off the face faster and with less spin when hit by a driver. Conversely, when the ball is hit by a wedge, the compression is not nearly as severe and that allows the softer, outer cover to pinch against the clubface and give the ball more spin.

"Multi-cover technology is intriguing, no question about it," says Wally Uihlein, chairman and CEO of Titleist and Foot-Joy Worldwide. "We'll be looking at it to see if it brings to the market any added value where the value previously did not exist."

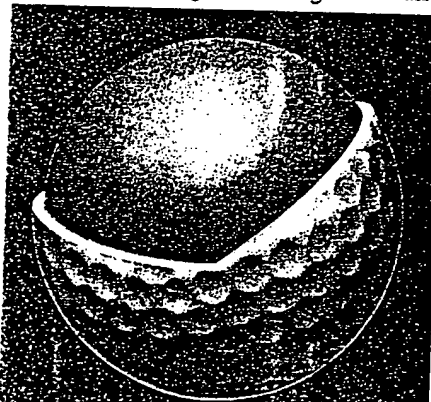
Golf balls continue the trend toward custom fitting for every kind of golfer imaginable. The beneficiary of all this

competition and innovation is the consumer, but only if he or she can keep the various models straight and know what ball best suits his or her game.

Titleist, for example, features six models of two- and three-piece balls in addition to five more in its two-piece Pinnacle line. Top-Flite features seven different models including the Strata Tour. Bridgestone has four balls in its EV line in addition to the Precept Tour. Maxfli has five varieties. Wilson and HPG (Hansberger) have eight. Slazenger has four and Hogan features three models in its line.

For those of you scoring at home, that's 51 different models of golf balls. And don't forget that both Callaway and Cobra will soon become players in the ball market.

"There are not too many horizons to explore in terms of aerodynamics with golf balls, but there are when it comes to the interfacing between golf ball and



Two-piece construction

Two-piece balls have come a long way since their distance-only debut in 1968.

clubhead," says Rick Watson, director of golf-ball marketing for Top-Flite.

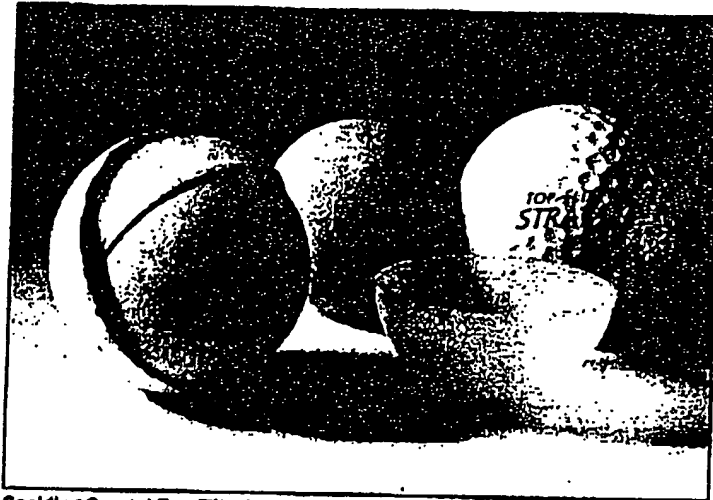
So what does the future hold for golf ball design? Will we see five- and six-piece balls?

"I think the future is a one-piece ball," says Rojas, "but that's a long way off."

—PETER FARRICKER

Los Angeles Times

Monday, September 30, 1996



Spalding Sports' Top-Flite Strata combines soft- and hard-ball advantages.

HOT STUFF/MARY PURPURA and PAOLO PONTONIERE

New Golf Ball Blends Distance and Control

Traditionally, golfers have had to choose between soft balls that offer greater control and hard balls that go farther. Now Spalding Sports Worldwide of Chicopee, Mass., ((800) 225-6601) has developed a ball that combines the benefits of both.

"Never before have we seen such enthusiasm from tour players for a new product during testing," says Mike Sullivan, Spalding's vice president for research and development. The hybrid Top-Flite Strata got a big push when Professional Golfer's Assn. pro Mark O'Meara won two firsts and two seconds in a few weeks using the ball.

What makes the Strata so special? Spalding modified its two-piece tour ball into a three-layer design by adding a hard layer (for distance) around the soft inner core and under a rubbery outer cover (for control). The Top-Flite Strata is available in stores that sell golf equipment and retails for about \$52 per dozen.



WEDNESDAY, FEBRUARY 12, 1997

Innovative three-piece ball suits

'guinea pig' O'Meara's game better

By Jerry Potter
USA TODAY

Golf

Mark O'Meara has become a good salesman for Top-Flite, even though the only thing showy about him is the scores he's shooting on the PGA Tour.

Eight months ago he was the only Tour player using the Strata Tour ball. Now there are about 35. Total sales of the ball are nearing \$20 million.

"He's not a flashy guy, but other players view him as a leader," said Joe Henley, director of marketing and development for Top-Flite.

"You can mention Tiger Woods, Tom Lehman and Mark in the same breath when you're talking about the best players in the game."

O'Meara said he was "a guinea pig" when Top-Flite came to him last spring with the idea of playing their new three-piece golf ball that was supposed to combine the best properties of a solid ball and a wound ball.

In the last 13 months O'Meara has earned \$1.9 million on Tour.

He has won back-to-back events — the Pebble Beach (Calif.) National Pro-Am and Buick Invitational — and leads the PGA Tour in earnings with \$710,460 in four events.

O'Meara's success since switching puts him in an unusual position.

He leads the USA in the standings of the Ryder Cup and Presidents Cup.

The USA plays Europe in the Ryder Cup Sept. 26-28 at Valderrama in Sotogrande, Spain.

The Presidents Cup, which pairs the USA against an international team from non-Ryder

Cup countries, will be played at Australia's Royal Melbourne Golf Club in 1998.

O'Meara is taking two weeks off before returning to the Tour at the Nissan Open Feb. 27 in Los Angeles.

O'Meara has had great success with cars. He has won a Buick, Oldsmobile, Chrysler, Mercedes, Isuzu and a Honda, prizes given out by tournament sponsors. The one he hasn't won: a Toyota, the company O'Meara represents.

GOLF WORLD

INTERNATIONAL NEWS MAGAZINE OF

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RICHARD DOLE

O'Meara's new gear

Mark O'Meara's victory in the Greater Greensboro Chrysler Classic was good news for the people at Taylor Made and Top-Flite responsible for new equipment development. O'Meara used Taylor Made's new Burner irons and a soon-to-be-released Top-Flite multi-layered construction ball.

"Two weeks ago at the Masters, I went with the new [Burner] irons that don't have the bubble shaft yet," he said.

O'Meara won at Greensboro using new clubs and a new type of ball.

"It's a new design that I've been involved with. This week I had the 2-iron through sand wedge. They're similar to what's on the market but with less offset, and more of a tour model, but very new."

About his ball, O'Meara said, "It's a new golf ball that Top-Flite has produced. It really doesn't have a name yet. It was approved by the USGA [March 25] when the last approval list came out. And basically it's a multi-layer construction golf ball.

"That's what Top-Flite wants me to try. I've tested it, and it's going to be introduced at the U.S. Open."

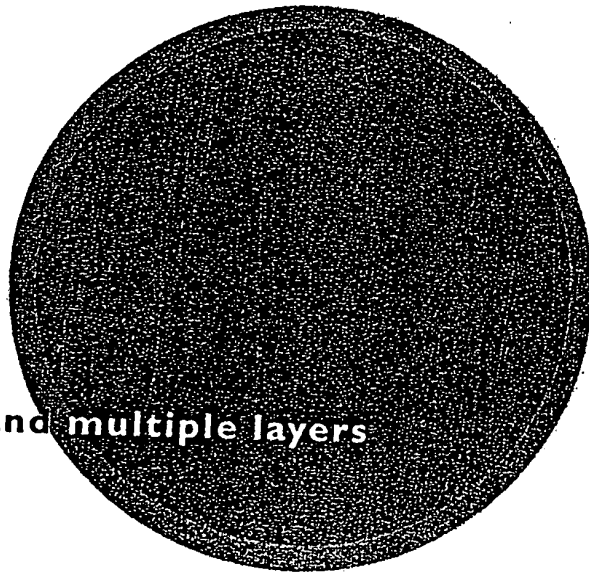
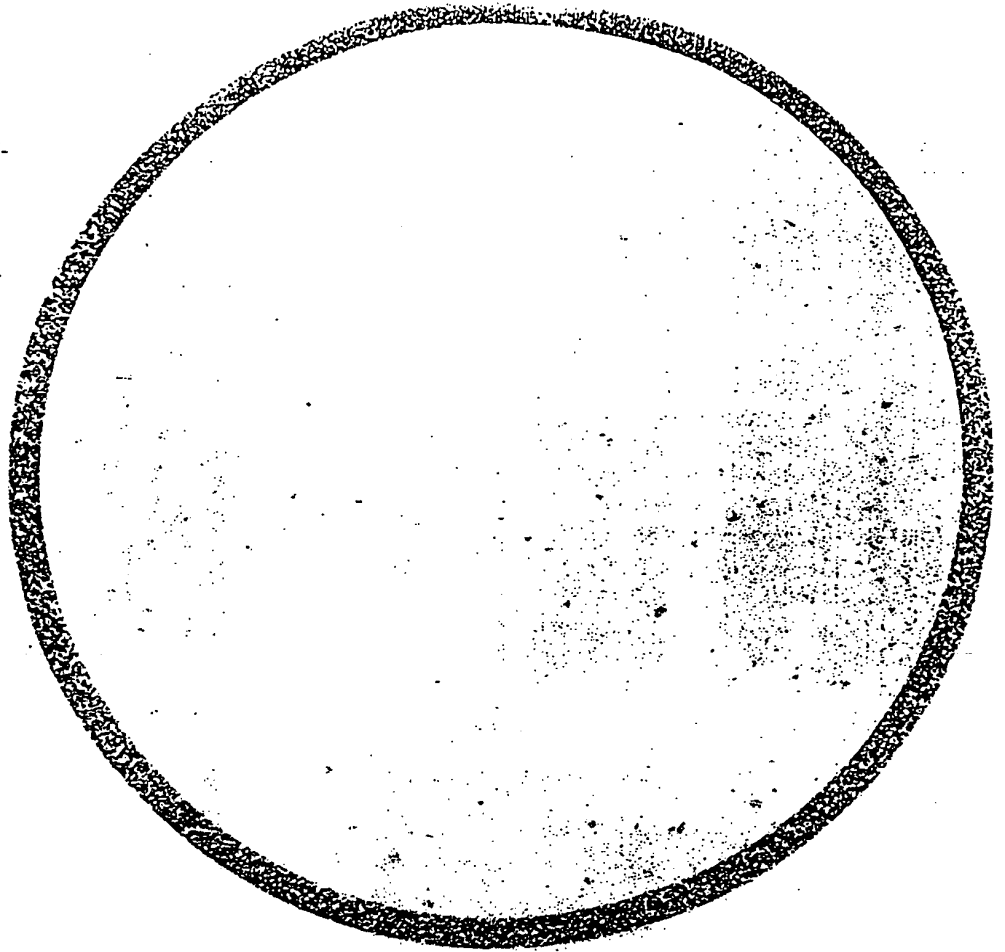
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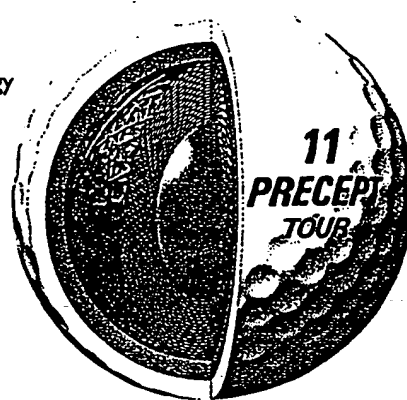
By Mike Chwasky

Selecting a golf ball isn't easy anymore. It seems like just a few years ago things were still fairly cut-and-dry: Pros and good players used the soft, high-spin balata variety, and everyone else used hard, surlyn models that were lost long before they wore out. It was a simple time, when optic yellow and orange were still okay, and even the occasional X-OUT wasn't a terrible thing. Things have changed though, as research and development departments around the industry have continued to develop and apply new technologies to the manufacture of today's golf balls.

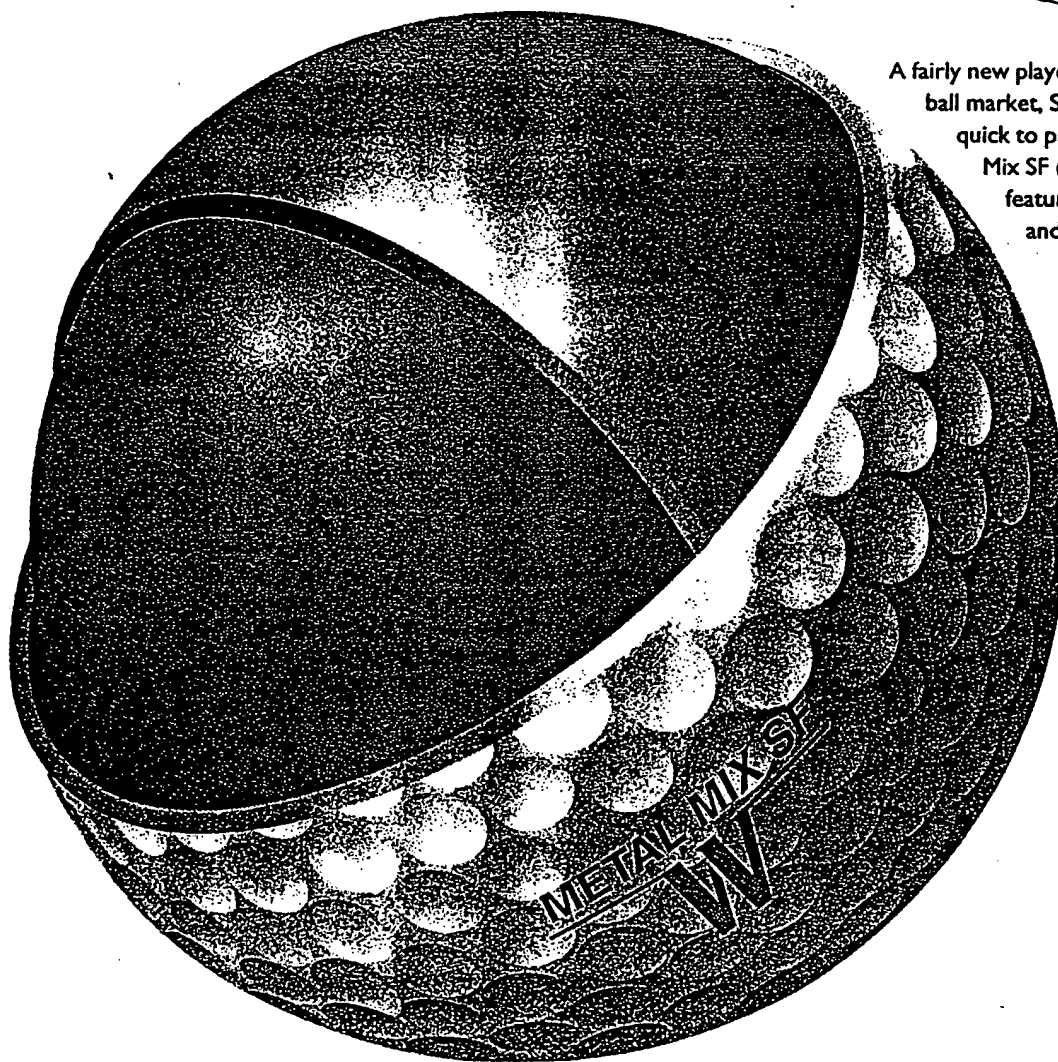
The two most significant new technological developments, both of which have become quite prevalent lately, are the multi-layer (aka double cover) design and the metal core or metal cover design. For those who aren't familiar with the different methods of golf ball construction, these design fea-

tures probably sound like fairly radical departures. However, it's important to understand that they're mostly variations or improvements on traditional two- and three-piece golf ball designs. (Note: Generally, a two-piece golf ball consists of a solid core and cover, while a three-piece golf ball consists of a solid or liquid-filled core, a high-tension wound layer and a cover.)

Bridgestone utilizes double-cover technology in the Precept Tour Double Cover (right) to help protect the integrity of the ball's windings and preserve its roundness.



A fairly new player in the U.S. golf ball market, Srixon has been quick to produce the Metal Mix SF (left), a product that features both multi-layer and metal technology.



The first ball that really brought multi-layer construction to the fore was the Top-Flite Strata. Prior to the Strata's release, Top-Flite was well known as the largest manufacturer of two-piece golf balls in the world. The problem for Top-Flite, however, and other companies that had committed to two-piece technology, was that while it was fairly easy to make golf balls with good distance and durability characteristics, it was difficult to make ones that could provide the spin and feel associated with three-piece, wound models. That's not to say that there weren't some very good two-piece balls on the market, because there were, some of which were played with success on the PGA Tour. But most would agree that all in all, the wound ball still provided the best spin and feel. Accordingly, pros and good amateurs swore by them.

Then came the Strata. Featuring what Top-Flite calls "breakthrough multi-layer technology," the Strata consists of a solid core, a firm inner layer and a soft outer cover. What this construction provides, according to Top-Flite representatives, is a non-wound product that can produce the spin and feel of a wound ball, while maintaining good distance characteristics. The key elements, though, are the spin and feel because that's what solid-core, non-wound balls traditionally lacked.

A testament to the Strata's performance characteristics is the unprecedented Tour acceptance it has achieved for a non-wound golf ball. A notable example of a Tour player using the Strata is Mark O'Meara, who played it in his win at the Masters earlier this year.

In regard to the future of golf ball technology, Top-Flite vice president of research and engineering Mike Sullivan comments, "Wound golf balls won't go away for a number of reasons, but over the next five years or so you'll see a proliferation of

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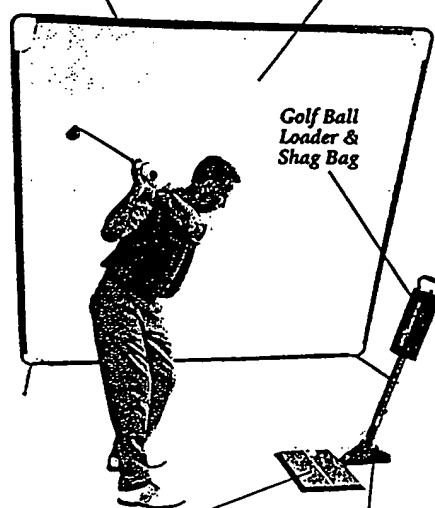
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multi-layering from a variety of golf ball manufacturers." Further evidence of this fact is Top-Flite's new Ball/Club System golf balls, which also feature multi-layer technology.

When it comes to golf ball manufacturing, no company is more well known or more closely associated with wound technology than Titleist. That's why it's so significant that the company's new HP2 Distance features double-cover technology.

But according to George Sine, vice president of research and development at Titleist, the company has employed this technology for a different reason than others have. "Our competitors have tried to replicate wound-ball performance with double-cover technology, but we have no reason to do that, for obvious reasons. We found that the best use for a double cover is to lower the spin rate of a golf ball, which in turn creates more distance. And, with a firm outer cover and a soft inner cover, we can also produce a ball that has feel."

Regarding the future of golf ball manufacturing and double-cover technology, Sine adds, "At Titleist, we're constantly seeking ways to provide discernable performance benefits to golfers. If we feel there's a technology that can help our products do that, then we'll pursue it, but we'll never introduce a new technology for marketing purposes only." Sine also comments that double-cover technology will continue to be particularly useful in the production of distance-oriented golf balls.

Bridgestone, manufacturer of Precept golf equipment, is a company that's using double-cover technology in both wound and non-wound products. According to Kelly Ellis, marketing manager at Precept Golf, the reason for this is because double-cover technology allows manufacturers to do different things with performance characteristics, depending on the product.

"With the Precept Dynawing, a firm cover and soft inner layer over an ultra-soft core provide an excellent combination of distance and feel. That's why this technology is so useful—it allows you to combine conflicting characteristics."

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Golf Ball Websites

www.kascogolf.com
www.maxfli.com
www.preceptgolf.com
www.ramtour.com
www.slazengergolf.com
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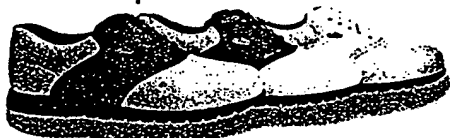
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Thanks largely to Wilson Golf and the company's Staff Titanium line (which features titanium in the core), multi-layer technology is joined by metal technology as the newest trend in golf ball design. According to Frank Simonutti, senior polymer chemist at Wilson, the core of the golf ball is the place where titanium is the most useful because it bonds the core materials, producing a golf ball that maintains high velocity without feeling hard.

In the company's new Staff Titanium Double Ti, however, which features a double cover, there's titanium in both the core and inner cover of the ball. Simonutti explains, "The Double Ti provides excellent distance because of the titanium core, and we tailored the titanium inner cover and surlyn outer cover to the core to balance the spin rate

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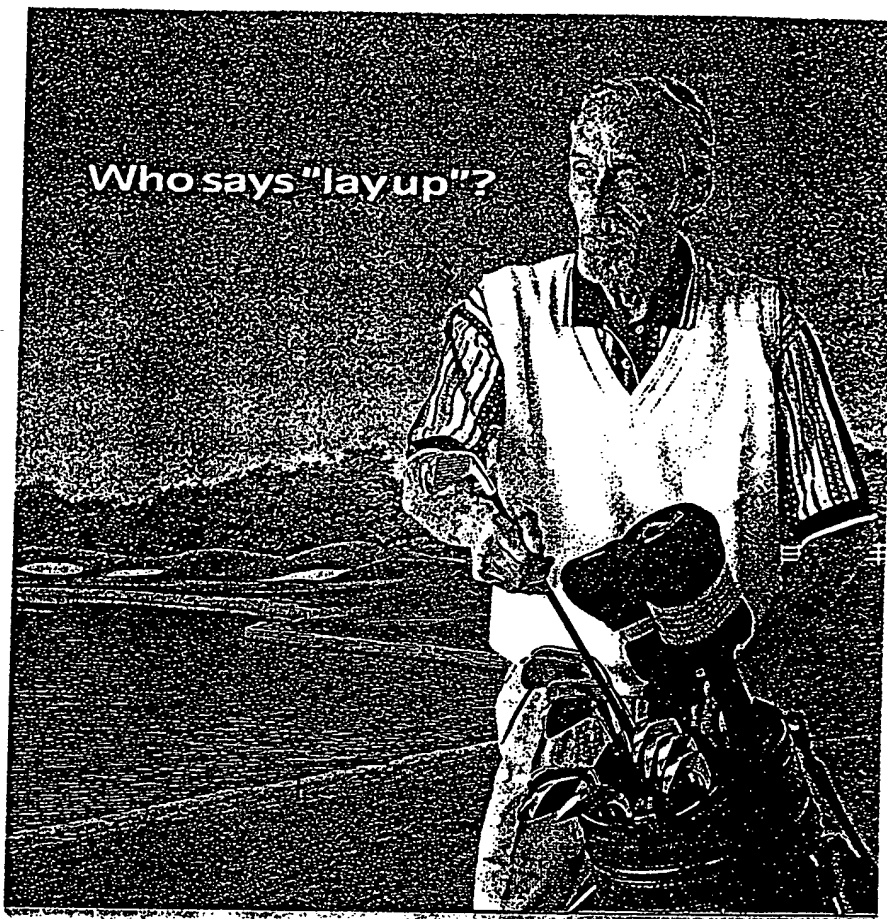
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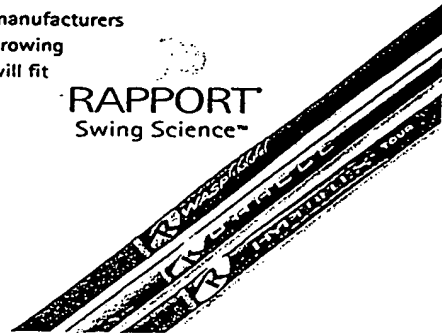
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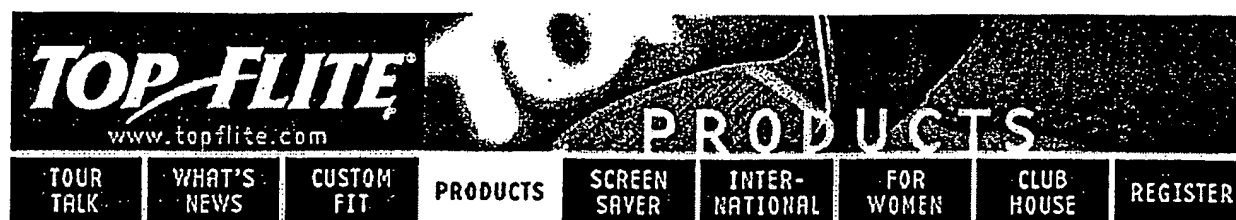
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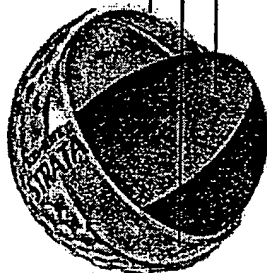
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Top-Flite Strata Tour's Impressive First Year on the PGA Tour.

Dozens of professionals worldwide have already switched to the new Top-Flite Strata Tour, including former wound ball players Mark O'Meara and Jay Don Blake. And the results have been impressive. Since switching to Strata Tour, O'Meara has reached the top 5 on the PGA Tour in money, in scoring, in greens in regulation and in birdies. Strata Tour has also recorded numerous Tour victories in its first year such as: O'Meara's win at Greensboro, D.A. Weibring's GHO victory, Walt Morgan's first place honors at the SPGA Ameritech, not to mention several international wins.

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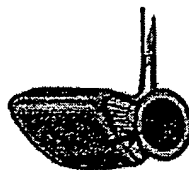
The multi-layer design of Top-Flite Strata Tour has redefined golf ball technology. By combining a super soft ZS Balata™ cover with a firm inner layer and a high-energy soft core, the new Strata Tour offers excellent distance off woods and longer irons with unequalled feel and control on short iron shots and around the green.

Distance Comparison		
DRIVER	Top-Flite Strata Tour Titleist Tour Balata Titleist Professional Maxfli HPH	Longest +6 Yards +3 Yards +4 Yards
5 IRON	Top-Flite Strata Tour Titleist Tour Balata Titleist Professional Maxfli HPH	Longest +4 Yards +4 Yards +2 Yards
Spin Comparison		
30 YARD PITCH	Top-Flite Strata Tour Titleist Tour Balata Titleist Professional Maxfli HPH	Highest +200 RPM +600 RPM +1300 RPM

Computer-Aided Design and Breakthrough Materials Make State-Of-The-Art Performance Possible.

The Strata Tour construction is revolutionary both inside and out. Its core composition is a patented polymer that delivers a remarkable combination of softness (for feel) and maximum distance. The patented inner layer, which is the impressive power behind Strata Tour, contains an exclusive formulated ionomer material.

Top-Flite Strata Tour has a new ZS Balata™ outer cover that is also patented. Its advanced polymer construction makes it not only soft and resilient, but cut resistant. This translates into added confidence on those all-important scoring shots around the green. Just as important, Top-Flite Strata Tour also provides consistent, reliable performance shot after shot, and hole after hole.



With woods and long iron shots, the firm inner layer and high energy core combine to produce low spin and long distance.



With short iron shots and around the green, the ZS Balata™ cover produces unequaled spin control with balata ball feel.

Strata Advance Specifications	
Ball Size	1.68"
Core Size	1.47"
Thickness	
Cover	0.050"
Mantle Layer	0.055"
Cover	
Shore D Hardness	46
Mantle Layer	
Shore D Hardness	70
Dimple Pattern	Tri
Number of Dimples	420

You'll See The Top-Flite Strata Tour On The Professional Tours... And At Golf Professional Shops.

The performance of Top-Flite Strata Tour continues to attract the attention of top tour players worldwide. Players like Jim Furyk and 1996 GGO winner Mark O'Meara have seen the difference Strata Tour can make in their game, and have made Strata their ball of choice for 1997.

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For more information on Top-Flite Strata Tour, call 1-800-225-6601.

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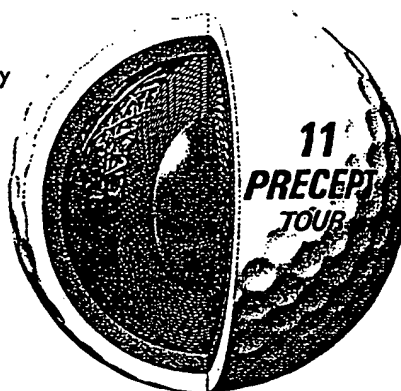
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Top-Flite 1997

Selecting a golf ball isn't easy anymore. It seems like just a few years ago things were still fairly cut-and-dry: Pros and good players used the soft, high-spin balata variety, and everyone else used hard, surlyn models that were lost long before they wore out. It was a simple time, when optic yellow and orange were still okay, and even the occasional X-OUT wasn't a terrible thing. Things have changed though, as research and development departments around the industry have continued to develop and apply new technologies to the manufacture of today's golf balls.

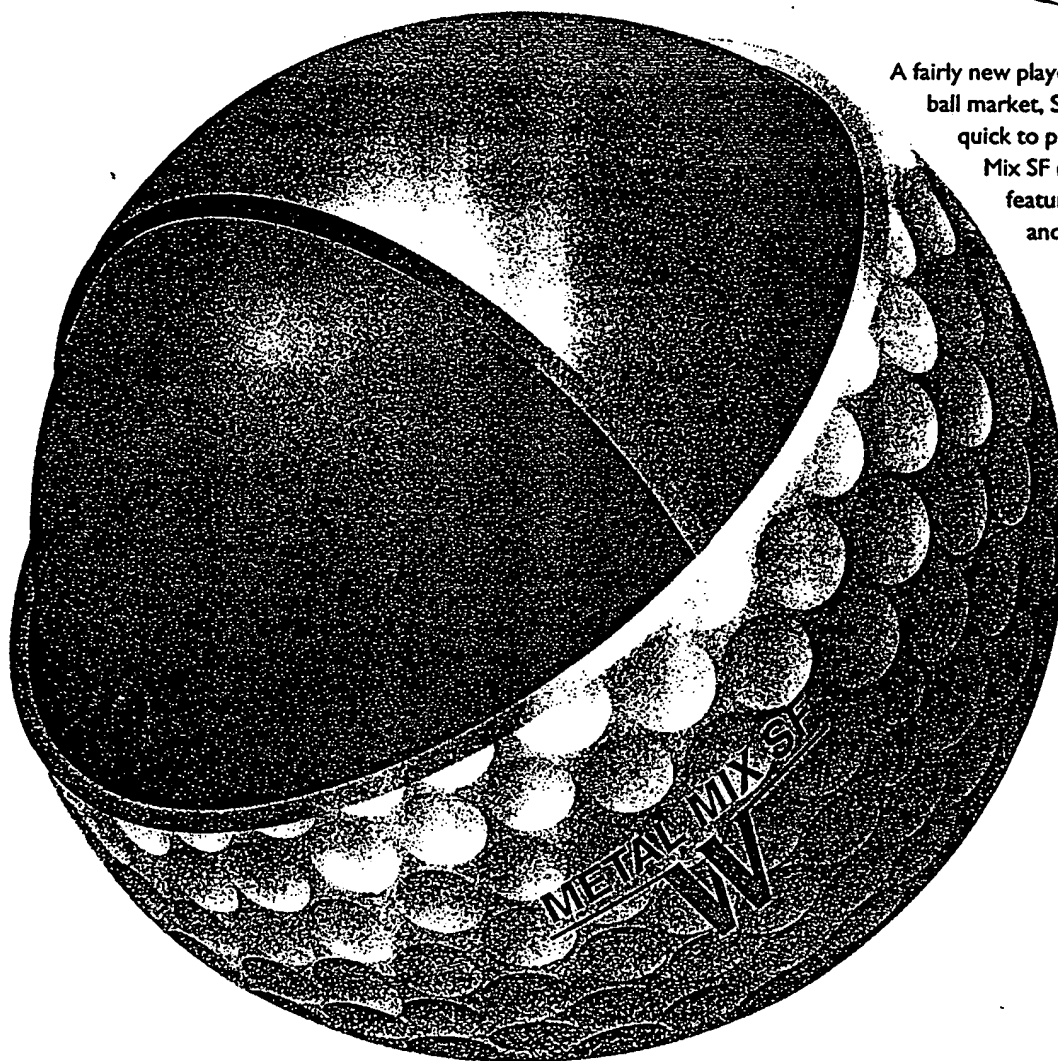
The two most significant new technological developments, both of which have become quite prevalent lately, are the multi-layer (aka double cover) design and the metal core or metal cover design. For those who aren't familiar with the different methods of golf ball construction, these design fea-

tures probably sound like fairly radical departures. However, it's important to understand that they're mostly variations or improvements on traditional two- and three-piece golf ball designs. (Note: Generally, a two-piece golf ball consists of a solid core and cover, while a three-piece golf ball consists of a solid or liquid-filled core, a high-tension wound layer and a cover.)

Bridgestone utilizes double-cover technology in the Precept Tour Double Cover (right) to help protect the integrity of the ball's windings and preserve its roundness.



A fairly new player in the U.S. golf ball market, Srixon has been quick to produce the Metal Mix SF (left), a product that features both multi-layer and metal technology.



The first ball that really brought multi-layer construction to the fore was the Top-Flite Strata. Prior to the Strata's release, Top-Flite was well known as the largest manufacturer of two-piece golf balls in the world. The problem for Top-Flite, however, and other companies that had committed to two-piece technology, was that while it was fairly easy to make golf balls with good distance and durability characteristics, it was difficult to make ones that could provide the spin and feel associated with three-piece, wound models. That's not to say that there weren't some very good two-piece balls on the market, because there were, some of which were played with success on the PGA Tour. But most would agree that all in all, the wound ball still provided the best spin and feel. Accordingly, pros and good amateurs swore by them.

Then came the Strata. Featuring what Top-Flite calls "breakthrough multi-layer technology," the Strata consists of a solid core, a firm inner layer and a soft outer cover. What this construction provides, according to Top-Flite representatives, is a non-wound product that can produce the spin and feel of a wound ball, while maintaining good distance characteristics. The key elements, though, are the spin and feel because that's what solid-core, non-wound balls traditionally lacked.

A testament to the Strata's performance characteristics is the unprecedented Tour acceptance it has achieved for a non-wound golf ball. A notable example of a Tour player using the Strata is Mark O'Meara, who played it in his win at the Masters earlier this year.

In regard to the future of golf ball technology, Top-Flite vice president of research and engineering Mike Sullivan comments, "Wound golf balls won't go away for a number of reasons, but over the next five years or so you'll see a proliferation of

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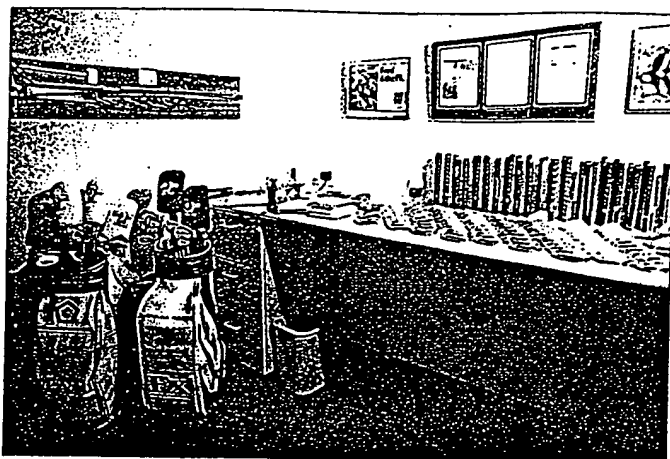
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multi-layering from a variety of golf ball manufacturers." Further evidence of this fact is Top-Flite's new Ball/Club System golf balls, which also feature multi-layer technology.

When it comes to golf ball manufacturing, no company is more well known or more closely associated with wound technology than Titleist. That's why it's so significant that the company's new HP2 Distance features double-cover technology.

But according to George Sine, vice president of research and development at Titleist, the company has employed this technology for a different reason than others have. "Our competitors have tried to replicate wound-ball performance with double-cover technology, but we have no reason to do that, for obvious reasons. We found that the best use for a double cover is to lower the spin rate of a golf ball, which in turn creates more distance. And, with a firm outer cover and a soft inner cover, we can also produce a ball that has feel."

Regarding the future of golf ball manufacturing and double-cover technology, Sine adds, "At Titleist, we're constantly seeking ways to provide discernable performance benefits to golfers. If we feel there's a technology that can help our products do that, then we'll pursue it, but we'll never introduce a new technology for marketing purposes only." Sine also comments that double-cover technology will continue to be particularly useful in the production of distance-oriented golf balls.

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- LPGA Nabisco Dinah Shore
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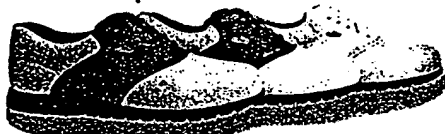
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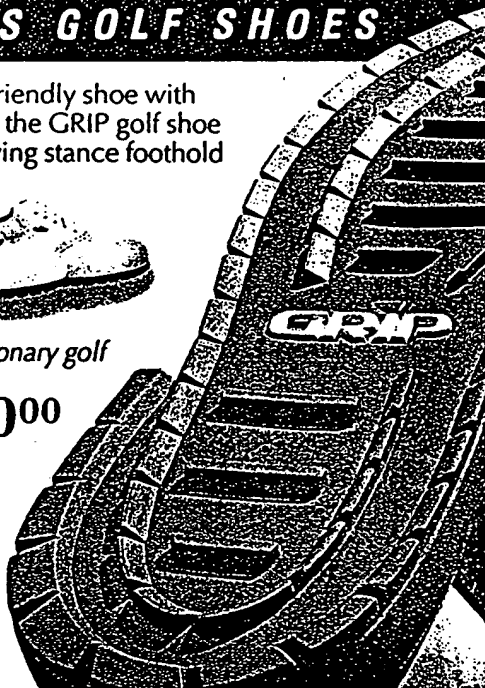
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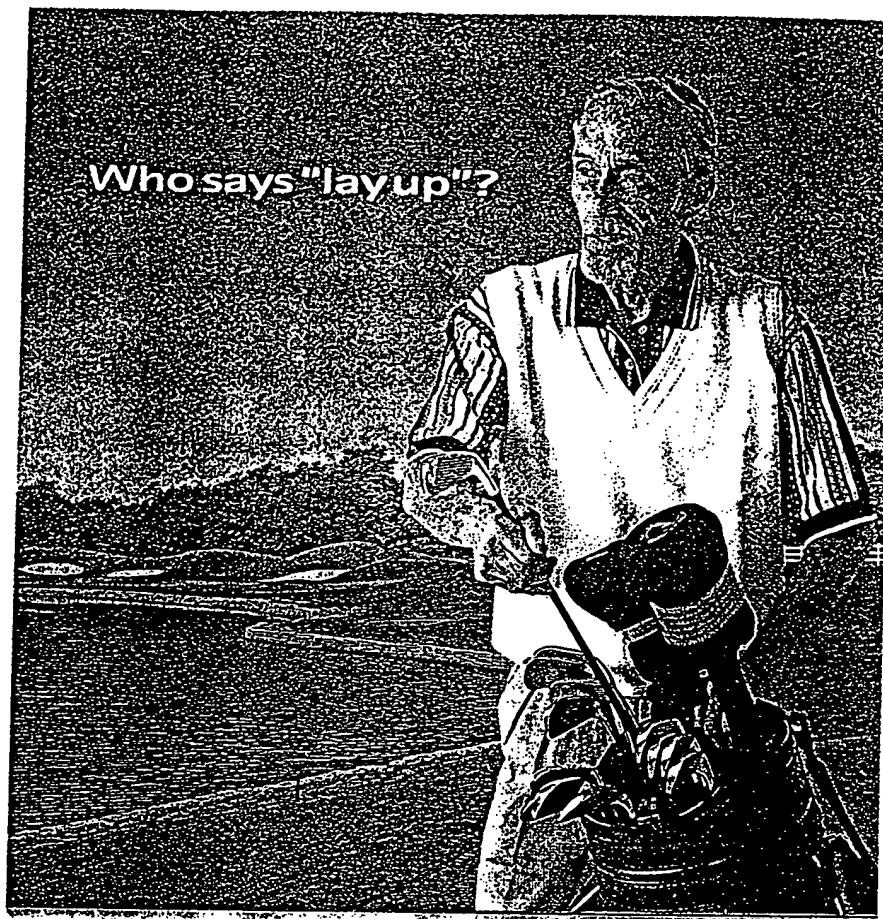
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